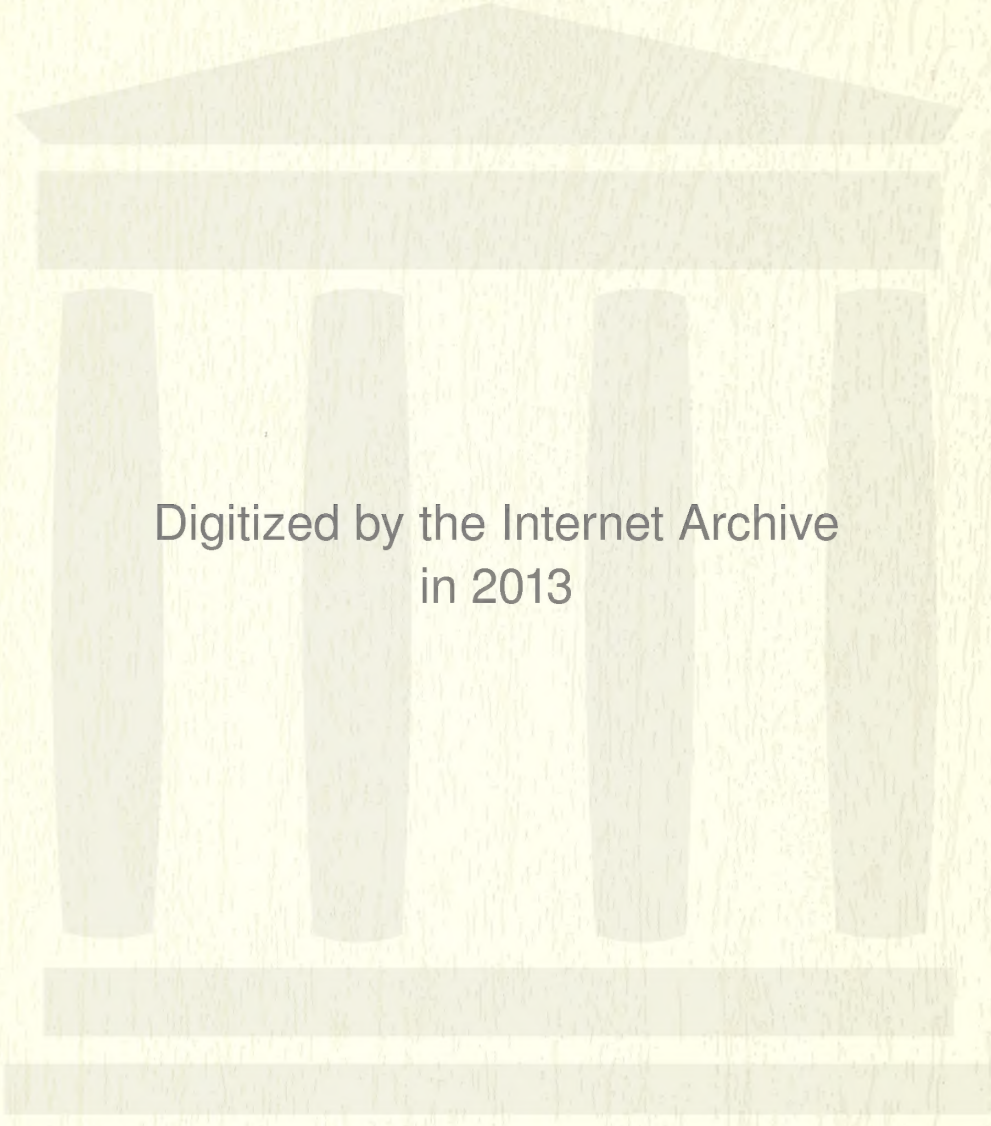

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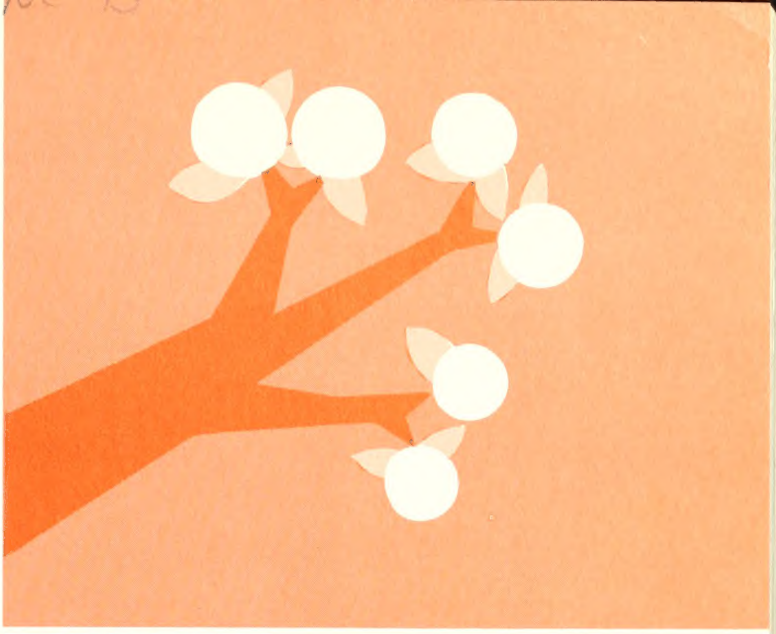

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FOREWORD

This report presents Wisconsin's timber resource in 1968 as found by the third Forest Survey of Wisconsin. It provides forest area, timber inventory, growth, mortality, removals, and forest industry statistics. It compares some of these findings with those of the 1956 survey.

The third Wisconsin Forest Survey was part of the continuing program authorized by Congress in the McSweeney-McNary Forest Research Act of 1928 to maintain a current inventory of the Nation's timber supply. The survey was organized and conducted jointly by the North Central Forest Experiment Station and the Wisconsin Department of Natural Resources. Each agency completed the aerial photo interpretation and field work for approximately half of the State. All work was done under the broad guidelines of the Department of Natural Resources Forest Advisory Council, a group composed of many public and private foresters within the State. The Eastern Region of the USDA Forest Service provided timber resource data for the two National Forests in Wisconsin. The Wisconsin Department of Highways, the Wisconsin Department of Natural Resources, and the Agricultural Stabilization and Conservation Service all provided aerial photographs used in the survey.

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HIGHLIGHTS

Forest Area

Forest land covers 43 percent of the State's land area or 14.9 million acres. In 1956 the area was 15.2 million acres.

Commercial forests account for 14.5 million acres compared with 14.9 million acres in 1956.

Poletimber stands constitute 45 percent of the commercial forest, more than any other stand-size class. In 1956, sapling and seedling stands dominated with 38 percent of the total.

Farmers, private individuals, and corporations other than forest industries own 60 percent of the commercial forest.

The aspen-birch type (4.2 million acres) and the maple-beech-birch type (3.5 million acres) embrace the largest areas of commercial forest of all forest types.

Timber Volume

Growing-stock volume on commercial forest land was 11.0 billion cubic feet in 1968, compared with 8.4 billion cubic feet in 1956.

Volume in sawtimber trees increased from 15.8 billion board feet in 1956 to 21.8 billion board feet in 1968.

The two northern Forest Survey units contain 68 percent of the growing-stock volume and 61 percent of the sawtimber volume.

Hardwoods account for three-fourths of the growing-stock volume.

Aspen is the chief species, followed by northern red oak and sugar maple.

Average volume per acre of growing stock is 756 cubic feet (9.6 cords).

Farmers and other individuals own 60 percent of the growing-stock volume.

In addition to the above growing-stock volume, there are 1.1 billion cubic feet in nongrowing-stock trees, principally rough trees.

Growing-stock inventory is projected to increase to 7.8 billion cubic feet in 1998.

Stand Conditions

Net annual growth on growing-stock trees was 500 million cubic feet in 1967, 30 percent higher than in 1956.

The net annual growth rate of growing stock was 4.5 percent of inventory volume.

Mortality of growing-stock trees amounted to 60 million cubic feet, or 0.5 percent of inventory.

Sixty-five percent of the commercial area is medium-stocked or better with growing-stock trees. Only 4 percent of the area is nonstocked with these trees.

Seventy-six percent of the commercial area is capable of growing trees 50 feet and taller at age 50, but only 19 percent is capable of growing trees 70 feet and taller at the same age.

Fifty percent of Wisconsin's forest area supports commercial stands less than 40 years old.

Timber Use

The number of primary wood-using plants in the State dropped from 1,753 in 1956 to 898 in 1967.

Wisconsin produced more paper (2.3 million tons) in 1967 than any other State, accounting for 11 percent of the country's total production.

Nearly half of the wood to operate Wisconsin's pulpmills is from out of State.

Timber products output of pulpwood in 1967 was 112 million cubic feet, up 52 percent from the 74 million cubic feet in 1956.

Sawmills account for 91 percent (818) of the total number of primary wood-using plants.

Lumber production in 1967 amounted to 286 million board feet, about the same as in 1956.

Growing-stock removals in 1967 were 233 million cubic feet, about half of the volume of net annual growth.

Growing-stock removals are projected to nearly double by 1998, reaching 426 million cubic feet.

Figure 1. – Generally flat topography, large expanses of hardwood commercial timber, lakes surrounded by marshes and lowland conifers, and fertile fields – the face of much of rural Wisconsin. Glaciers from a long-past ice age etched most of the State into its present landforms. (Photo courtesy of Wisconsin Department of Natural Resources.)

WISCONSIN'S 1968 TIMBER RESOURCE — A PERSPECTIVE

John S. Spencer, Jr. and Harry W. Thorne

THE FOREST

Wisconsin, perhaps best known for its sparkling waters and abundant dairy products, is a verdant State (fig. 1). Forest land in 1968 covered 43 percent (14.9 million acres) of the total land area. Most (14.5 million acres) of this is classed as commercial forest — land capable of growing industrial wood and not reserved from timber harvesting. These commercial forests supported 11.0 billion cubic feet in growing-stock trees, and 21.8 billion board feet in sawtimber-sized trees in 1968.

The above figures represent the latest situation in Wisconsin's forests which, like all living things, are in a perpetual state of change. The following few paragraphs suggest the extent of change that has occurred and put in better perspective the information in the rest of the report.

Her forests have always figured prominently in Wisconsin's past, and undoubtedly will be important in her future as well. Jean Nicolet, the first known non-Indian to visit the area now called Wisconsin, must have thought the forest endless in 1634. The settlers, who came after the Black Hawk War in 1832, must have thought so too, and probably cursed the sea of green as they undertook the task of leveling this barrier to their chosen vocation of raising crops and livestock. Lumbermen, however, began to make use of the timber and by 1860 there were 40 operating sawmills in Sheboygan, Manitowoc, and Kewaunee Counties alone. Most of the lumber produced in these mills found a ready market in burgeoning Milwaukee and Chicago after shipment by water down Lake Michigan.

Settlement of northern Wisconsin and much of the Midwest generally occurred after the Civil War, producing an insatiable demand for lumber and other wood products. As lumbering spread westward across the State to help meet this demand, Wisconsin entered the boom days of logging which were to peak about 1900. During this period great expanses of cutover land were left behind the faller's crosscut saw as generally only the inaccessible or unmerchantable stands were spared. High quality eastern white pine was especially prized.

The residue of dry logging slash fueled the many fires that later swept the cutover timberlands and sometimes spread to unlogged areas as well. Such fires were usually of little concern unless life or property were threatened. The calamitous Peshtigo Fire of 1871, in which more than 1,200 persons died and much of six counties in northeastern Wisconsin was burned, was plain, if unheeded, testimony to the seriousness of forest fire and the impropriety of contemporary logging practices.

Lumber companies sold some of their cutover land to settlers and land speculators. Much of it, however, simply became tax delinquent as the companies moved away to unlogged forests. The closing of mills and resulting loss of employment in woods and mill, together with a sharp reduction in tax revenues, spelled economic disaster for many communities.

Fortunately, man and nature both helped change the dismal picture across the State, until now the forest stands phoenixlike where once there were only ashes and blackened snags or poor trees. For his part, man passed legislation promoting forest management and fire control; established National, State, and county forests; provided special means for taxing forest properties; and planted trees. For hers, nature greened the barren landscapes with vegetation — annual and perennial weeds, brush, and trees. Trees ultimately triumphed on many

sites, although often they were not the same species as their immediate predecessors. Aspen, one of the postfire species, was especially prolific and was considered a virtually useless weed by many until recently.

Today's youthful forest is different in many ways from the one it replaced. Because it is a dynamic system, today's forest is even different from the one a decade ago. Some measure of this recent change can be seen by comparing 1956 and 1968 survey data.

Forty-Three Percent of State Is Forested

The areas of forest land (14.9 million acres) and commercial forest land (14.5 million acres) mentioned earlier represent slight declines from the 1956 areas of 15.2 million acres and 14.9 million acres,[1] respectively. This minor general decline is part of the long-term downward trend in forest areas throughout much of the country as forest land continues to be diverted to other uses to serve the desires of a growing population.

The decline in commercial forest area was not constant throughout the State, and slight increases even occurred in the easternmost Forest Survey Units as seen below:

Forest Survey Unit	*Survey Year* 1956	1968	*Area Change Since 1956*
	(Thousand acres)		*(Thousand acres)*
Northeast	4,045	4,062	+ 17
Northwest	5,459	5,246	-213
Central	2,948	2,832	-116
Southwest	1,545	1,493	- 52
Southeast	871	904	+ 33
Total	14,868	14,537	-331

The two northern Forest Survey Units contain two-thirds of the State's commercial forest area (fig. 2). Bayfield County, on the shores of Lake Superior, contains the largest area of commercial forest among counties in the State – 777,300 acres.

In addition to commercial forests there were 408.6 thousand acres of noncommercial forest land in the State in 1968. Most (374.4 thousand acres) of this was unproductive and inherently incapable of growing industrial wood, and the remainder (34.2 thousand acres) was land withdrawn from commercial timber use, such as State and county parks. This noncommercial land is highly important for its recreational, esthetic, wildlife habitat and watershed potential even though it yields few, if any industrial timber products.

Farmers, private individuals, and corporations other than forest industries own 60 percent of the State's commercial forest land; farmers alone own one-third of the total. Public owners account for 31 percent of the area of commercial forests, and forest industries own the remaining 9 percent. Among public owners, counties and municipalities own the largest share of the total (16 percent) followed by National Forests (9 percent).

The pattern of ownership has changed little since 1956 except for a shift of land from Federal ownership other than National Forests to forest industry ownership. This was largely the result of the transfer between surveys of land administered by the Bureau of Indian Affairs in Menominee County to ownership by Menominee Enterprises, a business corporation owned by members of the Menominee Indian tribe.

Area of Poletimber Stands is Largest

Poletimber stands comprise 45 percent of the commercial forest, more than any other stand-size class. In 1956, sapling and seedling stands were the largest class with 38 percent of the commercial area. Area of sawtimber and poletimber stands increased between surveys but area of nonstocked commercial forest decreased drastically (table 1).

The large drop in nonstocked areas is misleading because an unknown amount of it is not real, physical change. Improved sampling procedures used in the latest survey have provided a more sensitive estimate of established seedling trees. Had the newer techniques been used in 1956, some of the commercial forest classed as nonstocked then undoubtedly would have been classified as seedling stands. The changes found, then, understate the reduction in sapling and seedling stands and overstate by the same amount the change in nonstocked area. Unfortunately, this changed procedure precludes making any meaningful comparisons of nonstocked areas between surveys. It seems certain, however, that the nonstocked area did decline between surveys because of natural regeneration and tree planting. Much of the latter has been

[1] *Published 1956 areas have been adjusted for boundary changes between Forest Survey Units and to aline the 1956 estimates more closely with definitions of land classification used in the 1968 survey.*

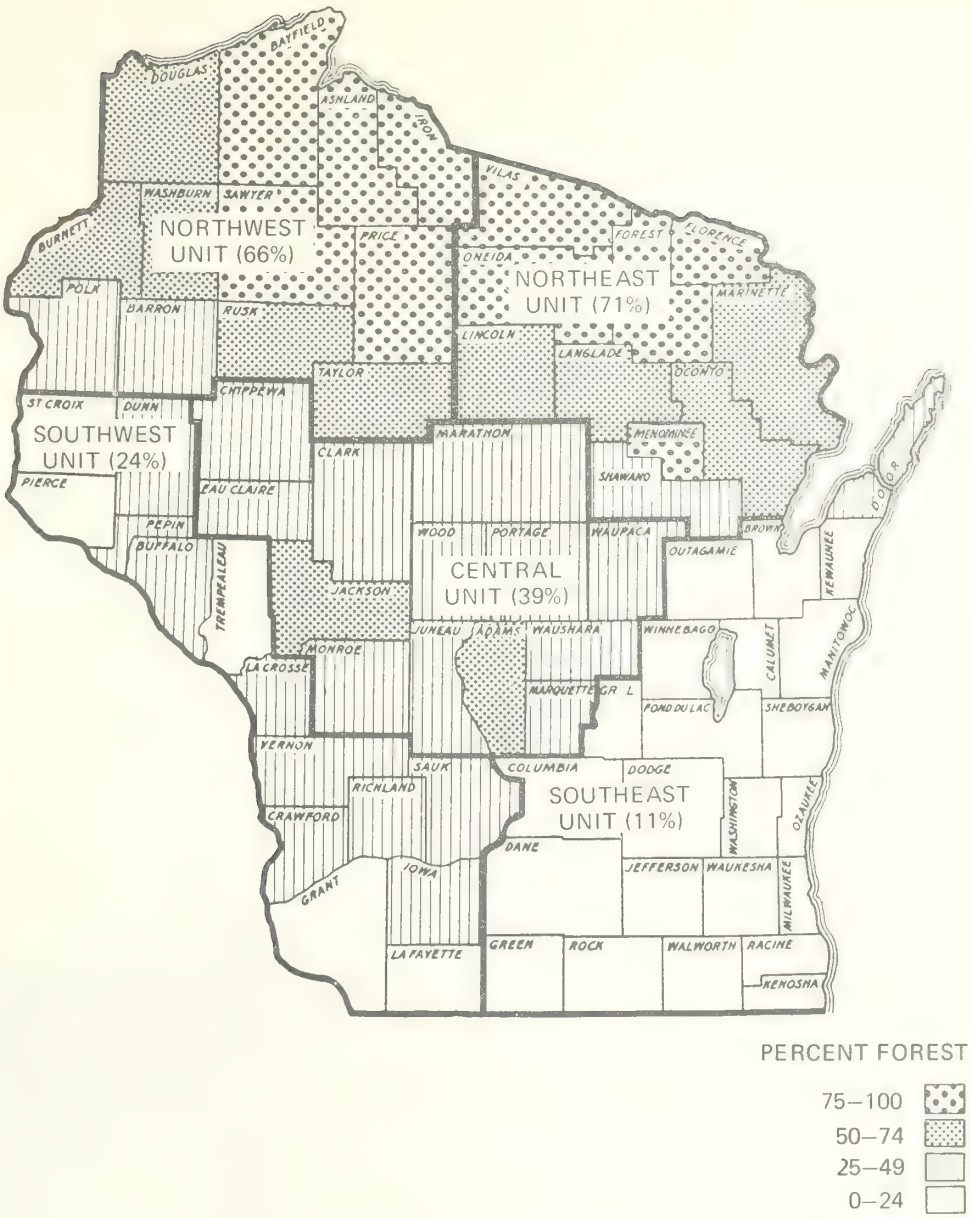

Figure 2. – Commercial forest area as a percent of all land area, by county, and by Forest Survey Unit, Wisconsin, 1968.

done in Wisconsin. From 1956 through 1968, more than half a million[2] acres were planted or seeded to forest trees, for an average of about 39,000 acres per year. The area planted has been in general decline since 1959, the peak year of the period, when 53,000 acres were artificially regenerated (fig. 3).

Much of the increase in area of the larger stand sizes is due to a general growth of trees into larger diameter classes and is dramatic evidence of the continuing improvement of the forests in Wisconsin and throughout the Lake States[3] from the cutover and/or burned over situation of the early 1900's. The remaining 4,489 thousand acres of sapling and seedling stands will con-

[2] *USDA Forest Service. Reports of forest and windbarrier planting and seeding. 1956-1968.*

[3] *Michigan, Wisconsin, and Minnesota.*

Table 1. – Commercial forest land area by stand-size class, Wisconsin, 1956 and 1968

Stand-size class	1956		1968	
	Thousand acres	Percent	Thousand acres	Percent
Sawtimber	2,054	14	3,098	21
Poletimber	4,822	32	6,580	45
Sapling and seedling	5,645	38	4,489	31
Nonstocked areas	2,347	16	370	3
All classes	14,868	100	14,537	100

Figure 3. – Planting red pine by machine. One probable reason for the decline in tree planting since 1959 is the huge success of past planting and the resultant shrinking area of nonstocked forest land.

tribute substantially to future ingrowth, the portion of annual net growth attributable to trees just entering poletimber size. This should help to maintain annual net growth at a high level at least through the 1970's. The number of growing-stock trees in the larger diameter classes increased between surveys (table 2). Concurrently, there was a decrease in the number of trees in smaller diameter classes.

Table 2. – Number of growing-stock trees on commercial forest land by diameter class, Wisconsin, 1956 and 1968

Diameter class	Number of growing-stock trees		Change
	1956 1/	1968	
	Million trees	Million trees	Percent
2	3,571	2,887	(-)19
4	1,777	1,583	(-)11
6	764	916	20
8	327	437	34
10	147	196	33
12	62	85	37
14	32	43	31
16	17	23	37
18	8	12	46
20	4	6	48
22+	4	6	43
Total	6,714	6,192	

1/ Published 1956 numbers of trees data were adjusted to be comparable with 1968 data.

The change in area of stand-size classes between surveys in Michigan is strikingly similar to the change in Wisconsin (table 3).

Table 3. – Area change between surveys, by stand-size class, Wisconsin, 1956-68, and Michigan, 1955-66 (In percent)

Stand-size class	Wisconsin	Michigan
Sawtimber	+51	+57
Poletimber	+36	+34
Sapling and seedling	-20	-21
Nonstocked areas	-84	-83
All classes	- 2	- 1

The Northwestern Unit contains the largest areas of every stand-size class except sawtimber stands. The latter are most numerous in the Southwestern Unit, probably partly because the predominant oak stands found on the tops of bluffs and steep hills common to this part of the State are relatively inaccessible and were seldom logged. This portion of Wisconsin is in the so-called "driftless area" that was missed by the smoothing action of the last glaciers.

Aspen-Birch Most Extensive Forest Type

The aspen-birch and maple-beech-birch forest types, which occupy 29 percent and 24 percent, respectively, of the total commercial area, were the most extensive in the State in 1968. These two types covered the largest areas during the 1956 survey also. However, the proportions each represented of the commercial forest changed somewhat between surveys as the aspen-birch area dropped and area of maple-beech-birch gained (table 4).

The drop in area of aspen-birch type can best be explained by an understanding of some of the characteristics of quaking aspen, the predominant member of the type. Quaking aspen is very intolerant of shade and is generally short-lived, reaching rotation age[4] in about 55 years on good sites and about 30 years on poor sites.[5] After fires or other disturbances it produces many aggressive suckers that reestablish aspen as the dominant species on the site. In Wisconsin and throughout the Lake States, aspen-birch replaced much of the original forests following logging and fires. Today mature aspen and paper birch are commonly replaced by more shade-tolerant species such as sugar maple, balsam fir, and white spruce. The probable outlook is for a continued decline in the area of this forest type because of natural plant succession unless management practices designed to favor aspen-birch – already applied on some areas – are more widely undertaken. Clearcutting is one such practice (fig. 4). It achieves the same results as fire in this regard by removing overstory trees in a patch or block of forest, permitting full sunlight to reach the forest floor and stimulate the growth of aspen suckers.

It may seem incongruous that the area of the aspen-birch type declined between surveys, yet, as mentioned

[4] *Rotation age is the age at which a species matures and is harvested.*

[5] *USDA Forest Service, 1965. Silvics of forest trees of the United States Agric. Handb. 271, 72 p.*

Table 4. – Commercial forest area by forest type, Wisconsin, 1956 and 1968

Forest type	1956		1968	
	Thousand acres	Percent	Thousand acres	Percent
Aspen-birch	4,684	31	4,219	29
Maple-beech-birch	2,634	18	3,522	24
Oak-hickory	2,461	17	2,665	18
Elm-ash-cottonwood	840	6	1,158	8
Jack pine	687	5	727	5
Spruce-fir	352	2	628	4
Black spruce	207	1	236	2
Northern white-cedar	207	1	302	2
White pine	172	1	178	1
Red pine	146	1	310	2
Tamarack	131	1	222	2
Nonstocked	2,347	16	370	3
Total	14,868	100	14,537	100

Figure 4. – The photos above show the speed with which aspen regenerates naturally after clearcut logging. The photo at left, taken in spring of 1971, shows an aspen-birch clearcut block in Vilas County following logging the previous summer. The photo at right is the same area as it appeared in late summer of 1971. The lush carpet of aspen sprouts assures that aspen will remain the dominant species here in the future, and provides valuable food and cover for deer, grouse, and other wildlife. (Photos courtesy of Wisconsin Department of Natural Resources.)

later, the volume of both aspen and paper birch gained. The explanation lies in the fact that there were more larger trees in 1968 than in 1956. As shown earlier, the total area of sapling and seedling stands dropped between surveys, but the area of poletimber and sawtimber stands increased.

Some of the increase in area of the maple-beech-birch and spruce-fir types is probably at the expense of the aspen-birch type as discussed above. The doubling of the red pine type between surveys is almost certainly due to tree planting. Much of the more than 500,000 acres of forest tree planting in the State between 1956 and 1968 was planted to red pine.

Tree Stocking Is Good

Tree stocking, expressed as a percent of the minimum stocking required to make full use of the site, is a useful measure of how well trees are utilizing an area. In general the stocking of live (growing-stock, rough, and rotten trees) and growing-stock trees is good in Wisconsin. For example, in 1968, 52 percent of the commercial forest area was overstocked or fully stocked (100 percent stocking or more) with live trees. When only growing-stock trees are considered, the figure changes to 24 percent. Ninety percent of the State's commercial area is medium-stocked or better (60 percent or more stocked) with live trees and 65 percent of the area is similarly stocked with growing-stock trees. Only 1 percent of the commercial area is nonstocked with live trees and only 4 percent is nonstocked with growing-stock trees.

The high rate of stocking of rough and rotten trees indicated above by the fairly wide differences between percent of area stocked with live and with growing-stock trees suggests a need for accelerated harvesting of rough and rotten trees or greater timber stand improvement effort. Thirty-one percent of all live trees in the State are rough or rotten. By far, the bulk are rough trees – those that are not classed as growing stock because of limbiness, poor form, or noncommercial species (fig. 5).

More rough trees are being used for lumber production as sawmills are equipped with more efficient machinery capable of using smaller logs. Logging operations in Wisconsin, as elsewhere, are moving toward more complete utilization of the timber resource by harvesting saw logs, pulpwood, and chip wood in one operation in some instances. Rough and rotten trees have had and will continue to have value by providing shelter for birds and some other forms of wildlife and by relieving the monotony to the viewer of some even-aged homogeneous stands.

Figure 5. – A poorly formed rough tree marked for removal. In the past most rough trees had little or no commercial value, although they occupied growing space. However, the intensifying interest in chipping wood and in maximizing fiber yield from the forest may kindle a new interest in these trees among landowners and timber producers alike. (Photo courtesy of Wisconsin Department of Natural Resources.)

Following are the proportions of all live trees in Wisconsin by tree class:

	Percent of all live trees
Growing-stock trees (over 1-inch d.b.h.):	
Saplings	50
Poles and sawtimber trees:	
Desirable	1
Acceptable	18
Rough trees (over 1-inch d.b.h.)	29
Rotten trees (over 1-inch d.b.h.)	2
All live trees (over 1-inch d.b.h.)	100

Four-Fifths of Commercial Area on Average or Low Sites

An exact method of determining the potential productive capacity of forest land has yet to be devised. However, an approximation of the present productivity of the land is provided by site index[6] because the most productive land usually grows the tallest trees at an index age (50 years in this report). Even though there is wide fluctuation between species, forest land in the Midwest can generally be categorized as follows:

Site index class	*Description*
55 or less	Low site
56 to 70	Average site
More than 70	High site

Measurements of site index indicate that 76 percent of Wisconsin's commercial forest land is capable of growing trees 50 feet and taller at age 50, but only 19 percent is capable of growing trees 70 feet and taller at the same age. The proportion of area in each site index class for each of Wisconsin's four largest types is shown in table 5.

Table 5. – Area of commercial forest land by site index class for selected forest types, Wisconsin, 1968 (In percent)

Site index class	Aspen-birch	Maple-beech-birch	Oak-hickory	Elm-ash-cottonwood
90-100	1	--	1	1
80- 90	7	3	3	4
70- 80	24	16	10	9
60- 70	34	38	22	18
50- 60	24	33	33	32
40- 50	8	9	24	25
30- 40	2	1	7	10
20- 30	--	--	--	1
	100	100	100	100

Still another way of gaging the productive capacity of Wisconsin's forest land is to consider site class. This is a means of grouping forest lands in terms of their inherent capacity to grow crops of industrial wood. The following tabulation shows the percent of commercial forest land in Wisconsin and in neighboring Michigan in each site class, representing potential growth in cubic feet per acre per year providing all stands had an optimum distribution of age classes and were fully stocked and adequately protected.

	Percent of commercial forest area	
Site class	*Wisconsin*	*Michigan*
120 to 165 cubic feet	1	1
85 to 120 cubic feet	10	10
50 to 85 cubic feet	36	30
Less than 50 cubic feet	53	59
Total	100	100

The above proportions are not the best that can be expected in either State. Potential growth may be increased even further in the future by such stratagems as fertilization, genetic improvement of trees, type conversion, irrigation, and drainage control.

Half of State's Timber Younger Than 40 Years

Timber stands in Wisconsin are generally young. On 50 percent of the commercial area, stands are less than 40 years of age and 83 percent of the area supports stands less than 70 years old. Despite the youth of forests in the State – common throughout the Lake States – most forest types include some stands that are over rotation age and, therefore, are considered overmature. Also, the distribution of age classes for all forest types is not balanced. This is not particularly significant for those large areas in the State where uneven-aged management, a system that results in trees of many ages being present in the stand, is practiced or contemplated. Stand-age distribution is important in planning the harvest sequence of stands managed under even-aged systems. Although there are a number of forest types in Wisconsin that may be managed in this manner, most notably aspen-birch, individual stand conditions and owner preferences and goals will determine the management prescription.

A model even-aged forest situation for maximum timber production would have an equal area in each 10-year-age class for each forest type and no overmature timber. While these ideal conditions rarely occur anywhere except under intensive management, they are a goal towards which present management can aim in those stands for which even-aged management is prescribed.

The largest area in three of the four major forest types is in the 40- to 59-year age class (fig. 6).

[6] *Site index is the height in feet of average dominant or codominant trees at 50 years of age. For example, "site index 60" for red pine means that the height of dominant or codominant trees in that area averages 60 feet at 50 years of age.*

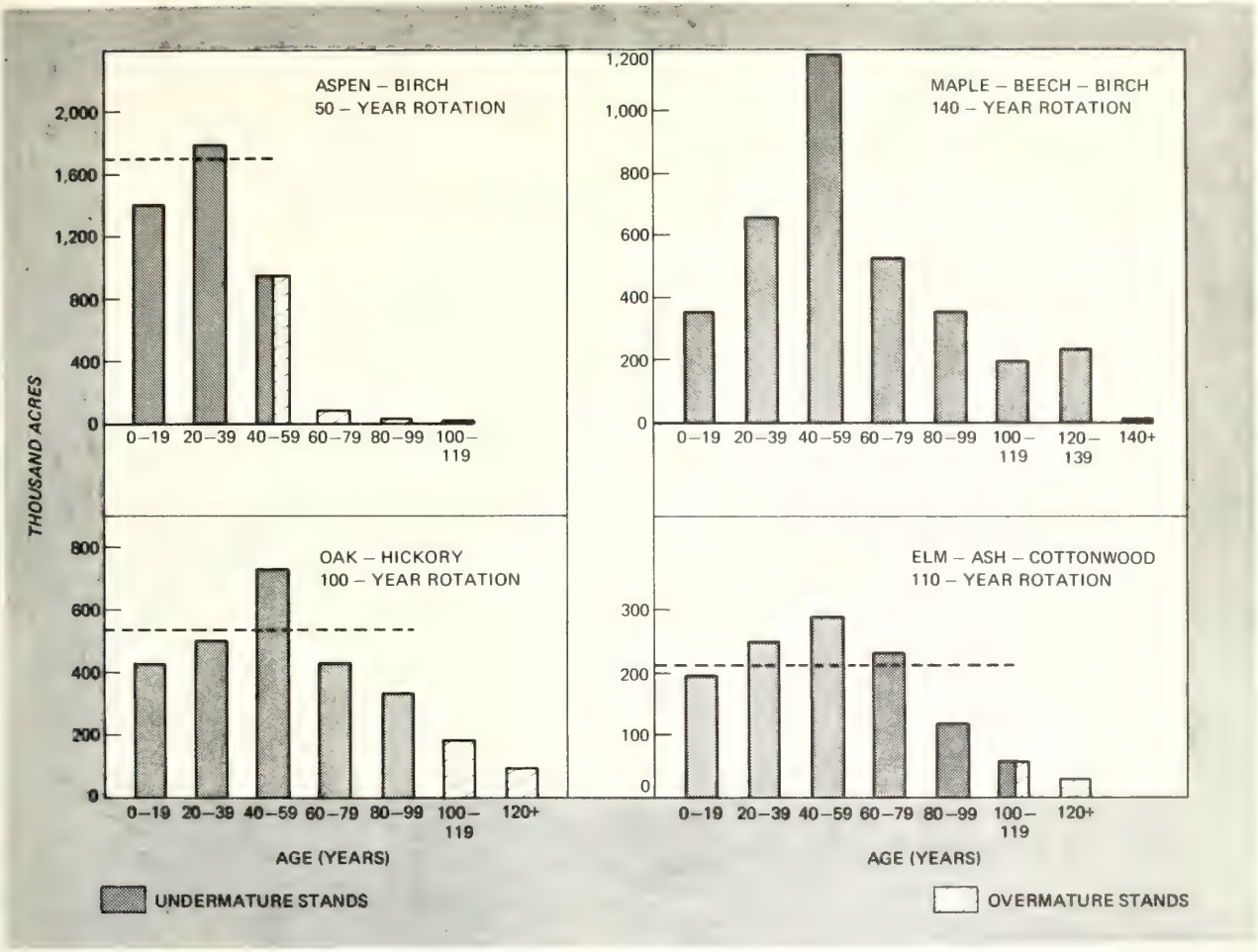

Figure 6. – Area of some forest types by stand-age class and desirable area based on rotations suggested for average sites in Wisconsin, 1968. Broken lines show desirable level for rotation shown. (No desirable level shown for the maple-beech-birch type because this type is usually managed under all-aged conditions.)

The predominance of stands originating around 1920 is probably largely due to the decline of logging in the State after its peak about 1899 and subsequent natural regeneration, much of which followed the burning of cutover areas. Fire played a big role in the genesis and character of stands then because little was done to control it. Although minimal public forest fire control efforts were undertaken as early as 1895, it was not until the early 1930's that the program was funded and staffed sufficiently to reduce significantly the annual burned acreage.

Small areas of overmature stands occur in all but the maple-beech-birch type. Mortality in the three affected types will be reduced as these overmature stands diminish.

Volume of Growing Stock Up 30 Percent

Wisconsin's 1968 volume of growing stock on commercial forest land amounted to 11.0 billion cubic feet, a 30 percent gain from the 8.4 billion cubic feet in 1956.[7] This large increase came about in spite of a 2.2 percent loss of commercial forest area between surveys. Such a seemingly implausible situation can exist in young forests such as those in Wisconsin where the area of pole-timber and sawtimber stands, with attendant high volumes per acre, is increasing, and the area of sapling and seedling stands and nonstocked areas, with low volumes

[7] *Published 1956 volumes have been adjusted to be comparable with 1968 volumes.*

per acre, is declining. The following tabulation compares growing-stock volumes for 1956 and 1968:

	1956	*1968*
	(Million cubic feet)	
Softwoods	1,670	2,475
Hardwoods	6,768	8,521
Total	8,438	10,996

Volume in the Northwestern Forest Survey Unit increased more between surveys than any other unit. This explains why the Northwestern Unit contained the largest growing-stock volume in 1968 – 35 percent of the State total – but ranked second in 1956 to the Northeastern Unit. The Northeastern Unit was a close second in 1968 with 32 percent of the State's volume. Volumes in every unit increased except for softwoods in the Southwestern Unit (table 6).

Table 6. – Growing-stock volume in 1968 and change since 1956, Wisconsin

Survey unit	Softwoods		Hardwoods	
	1968 volume	Change	1968 volume	Change
	Million cu. ft.	Percent	Million cu. ft.	Percent
Northeastern	1,148.2	+36	2,384.6	+31
Northwestern	911.1	+73	2,987.0	+42
Central	320.8	+56	1,321.5	+18
Southwestern	21.5	-19	1,218.6	+ 2
Southeastern	73.1	+ 9	609.7	+13
Total	2,474.7	+48	8,521.4	+26

The average volume per acre of growing stock rose from 567 cubic feet (7.2 cords) in 1956 to 756 cubic feet (9.6 cords) in 1968. The largest average volume per acre in 1968 was in the Northeastern Unit (870 cubic feet).

Hardwoods accounted for three-fourths of the growing-stock volume in 1968. However, the volume of softwoods increased much faster between surveys than did the hardwood volume, resulting in a gain in the proportion of volume in softwoods from 20 percent of the total in 1956 to 23 percent in 1968.

Five species made up half the total hardwood volume in 1968: aspen,[8] with twice as much volume as any other species, had 20 percent of the total followed by northern red oak (9 percent), sugar maple (9 percent), paper birch (7 percent), and elm (6 percent). Almost all species increased between surveys (fig. 7). The major exception was white oak which declined slightly. Surprisingly, the volume of elm gained in spite of the spread of Dutch elm disease into all but the northwest corner of the State by 1968. The probable outlook for elm is increasing heavy mortality as a direct result of the Dutch elm disease, causing inventories to dip. This was the case in lower Michigan where the disease was reported earlier than in Wisconsin.

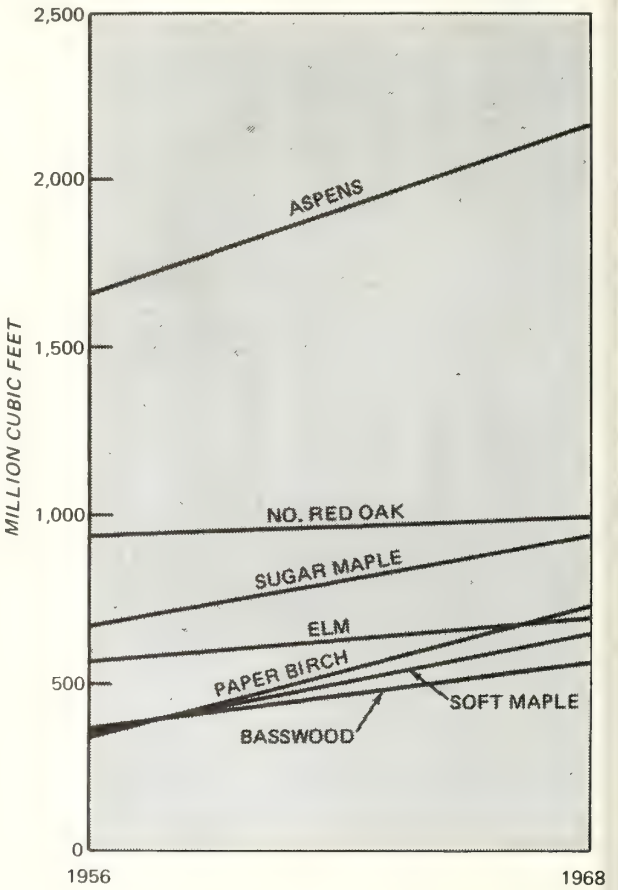

Figure 7. – Change in growing-stock volume between surveys for some major species in Wisconsin.

In general, the bulk of the softwood growing-stock volume is found in the two northern units. These units also contain the greatest volumes of hardwoods, but the two southern units have the highest proportion of hardwood volume to softwood volume: 98 percent of the volume in the Southwestern Unit is in hardwood species as is 89 percent of the Southeastern Unit volume.

Forty-five percent of the State's important aspen growing-stock volume is in the Northwestern Unit. The Northeastern Unit contains another 32 percent of it.

[8] *Includes both quaking and bigtooth aspen.*

Growing-stock volumes gained in every diameter class, with gains especially large in the smaller diameters (fig. 8). This situation is common in the Lake States where forests are generally young and rebuilding.

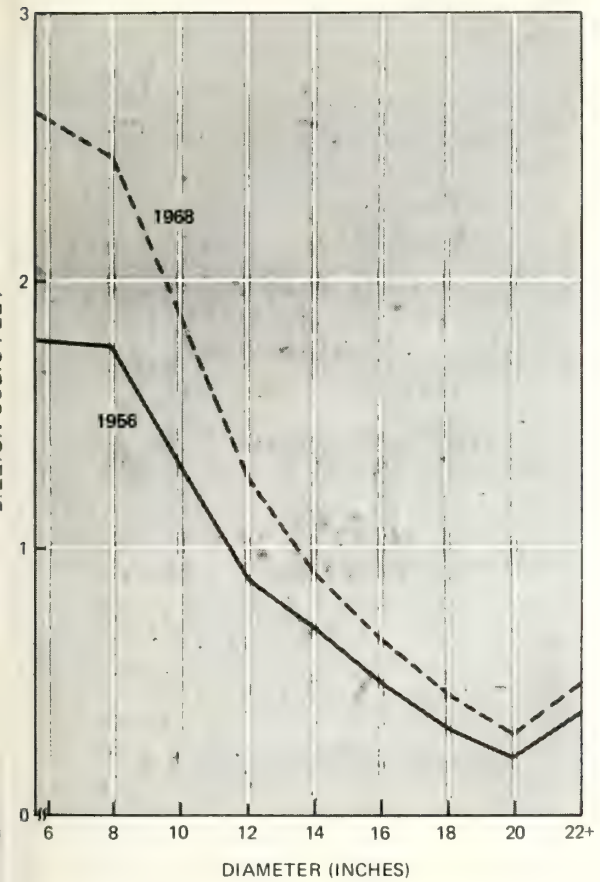

Figure 8. – Distribution of growing-stock volume by diameter class, Wisconsin, 1956 and 1968.

Farmers, private individuals, and corporations other than forest industries own 60 percent of the growing-stock volume in the State. Public agencies other than the USDA Forest Service own another 20 percent of the volume. Volume per acre is highest on forest industry-owned commercial forest land – 918 cubic feet, compared with the State average of 756 cubic feet.

Nongrowing-Stock Volume Amounts to 1.1 Billion Cubic Feet

Besides the 11.0 billion cubic feet in growing-stock trees, there is another 1.1 billion cubic feet in nongrowing-stock trees in the State. Most of the latter volume is in rough or rotten trees, but a small amount is in salvable dead trees. Short-log trees are rough trees and account for 34 percent of the nongrowing-stock volume. These trees must be sawtimber-sized and have at least one merchantable 8- to 11-foot saw log, but do not contain a 12-foot saw log. Short-log trees are utilized for pulpwood and saw logs by industry. Little of the remaining nongrowing-stock volume is harvested, although some of it is used for fuelwood, fenceposts, pulpwood, and veneer bolts. Volume in nongrowing-stock trees is distributed as follows:

Class of timber	*Volume (Million cubic feet)*
Rough trees:	
Short-log trees	383.9
Other rough trees	439.1
Rotten trees	260.8
Salvable dead trees	53.6
Total	1,137.4

Sawtimber Volume Increased 37 Percent

The sawtimber portion[9] of the growing-stock volume also increased between surveys and at a faster rate than total growing-stock volume. Sawtimber volume rose from 15.8 billion board feet[10] in 1956 to 21.8 billion board feet in 1968, a gain of 37 percent compared with the 30 percent rise in growing-stock volume. The softwood and hardwood sawtimber distribution of the two surveys is shown below:

	1956	*1968*
	(Million board feet)	
Softwoods	4,783	6,497
Hardwoods	11,049	15,259
Total	15,832	21,756

One-third of the State's 1968 sawtimber volume is found in the Northeastern Unit – more than in any other unit. As mentioned earlier, the largest growing-stock volume is in the Northwestern Unit. In 1956 the Northeastern Unit also led in volume of sawtimber, but between surveys, volume increased faster in the Northwestern Unit (table 7).

[9] *Sawtimber trees are growing-stock trees that contain at least one 12-foot saw log or two noncontiguous saw logs, each 8 feet or longer and are at least 9.0 inches d.b.h. for softwoods and at least 11.0 inches d.b.h. for hardwoods.*

[10] *International 1/4-inch log rule.*

Table 7. – Sawtimber volume in 1968 and change since 1956, Wisconsin

Survey unit	Softwoods		Hardwoods	
	1968 volume	Change	1968 volume	Change
	Million bd. ft.	Percent	Million bd. ft.	Percent
Northeastern	3,354.9	+28	3,946.8	+52
Northwestern	2,157.4	+59	3,865.7	+77
Central	810.8	+54	2,438.3	+19
Southwestern	41.9	-62	3,378.8	+16
Southeastern	132.1	-17	1,629.0	+25
Total	6,497.1	+36	15,258.6	+38

The average sawtimber volume per acre in 1956 was 1,065 board feet, but in 1968 it had risen to 1,496 board feet. Highest volumes per acre are found in the south – 2,291 board feet in the Southwestern Unit and 1,949 board feet in the Southeastern Unit.

Hardwoods dominate the sawtimber volume as they do growing-stock volume. Several of the species that contain the largest growing-stock volumes also contain the largest sawtimber volumes. However, the ranking of species differs, and two softwood species are among the top six in terms of proportion of sawtimber volume: northern red oak (13 percent of total sawtimber volume), sugar maple (10 percent), aspen (10 percent), white pine (9 percent), elm (9 percent), and hemlock (7 percent).

The largest volume by far of northern red oak, and other oaks as well, is in the Southwestern Unit. The biggest concentration of sugar maple sawtimber volume is in the Northeastern Unit.

The pattern of ownership of the sawtimber inventory is similar to that of the growing-stock volume – farmers, private individuals, and corporations other than forest industries own 63 percent of it. Public agencies own a slightly smaller percentage of the sawtimber inventory than of the growing-stock inventory.

Quality of Butt Logs Better For Hardwoods than For Softwoods

An estimate of the quality of the sawtimber trees in Wisconsin's forests was made by grading the butt log in about one-third of the sawtimber trees sampled during the 1967 survey (table 8). (Log grade standards used for each species are indicated in the Appendix.)

The means are not available to convert the above percentages in Wisconsin to an expression of whole-tree quality. The recent Michigan survey provided data that did permit such a conversion for hardwoods in that State. The result in Michigan showed that the percentage of hardwood-tree volume in each log grade was practically the same as the percentage of butt logs in each grade.

Table 8. – Percent of sawtimber trees by butt log grade and softwoods and hardwoods, Wisconsin, 1968

Butt log grade	Softwoods	Hardwoods
Grade 1	2	10
Grade 2	8	32
Grade 3	85	53
Grade 4	5	5
Total	100	100

The percentage of sawtimber trees with a Grade 1 butt log in Wisconsin was highest for cottonwood, for which there is presently low demand, and northern red oak, presently in high demand. Other species with high percentages of Grade 1 butt logs were ash, basswood, and elm. The primary reason all of the above species have high percentages of Grade 1 butt logs is their big percentage of trees in the upper diameter classes where better quality butt logs are possible.

Volume of Net Growth Rises

Net annual growth on growing-stock trees was 500 million cubic feet in 1967, a 30 percent increase over the 391 million cubic feet in 1955. The 1967 growth rate was 4.5 percent of inventory compared with 4.6 percent in 1955. Growth in 1967 averaged 34 cubic feet per acre in comparison with 26 cubic feet per acre in 1955. Although this represents a substantial gain between surveys and is further evidence of the improving condition of the State's forests, it is still much below the estimated average annual capacity of the commercial forest to produce 49 cubic feet of wood per acre. As mentioned earlier, this potential growth presupposes ideal conditions – fully stocked stands and optimum distribution of age classes. Therefore, potential yield serves as a goal as forest managers try to better the conditions for growth.

One-fourth of the total net growth in 1967 was ingrowth – the net volume of small trees that grew to poletimber size during the year. The other three-fourths of the total was growth on trees already 5 inches d.b.h. and larger (fig. 9). The 4.5 million acres of sapling-seedling stands in 1968 represent a potentially large

Figure 9. – A field man measures the diameter at breast height (d.b.h.) of a sawtimber-sized tree while his companion records information on plot sheet. Such measurements made on the same trees during the 1956 and 1968 surveys on permanent sample plots provided a value of radial growth accrued between surveys. This information was used to estimate the total volume of growth in the State. (Photo courtesy of Wisconsin Department of Natural Resources.)

volume of ingrowth for the next 10 to 15 years. However, as the area of this stand-size class diminishes, as it has done between surveys, the volume of ingrowth will also diminish. This means that the present volume of growing-stock growth cannot be maintained for much longer if the intensity of management is not increased. The 30-year projections of inventory, growth, and removals that follow later in the report assume no change in the intensity of forest management and indicate a leveling off or turndown of growth volume toward the end of the period.

The percentage of total growth represented by ingrowth was somewhat larger in Wisconsin than in Michigan (table 9).

Sawtimber net annual growth increased between surveys from 912 million board feet in 1955 to 1,264 million board feet in 1967, a gain of 39 percent. Sawtimber

Table 9. – Volume of net annual growth by components of growth, Wisconsin, 1967, and Michigan, 1965

Component of growth	Net annual growth on growing stock			
	Wisconsin		Michigan	
	Thousand cu. ft.	Percent	Thousand cu. ft.	Percent
Ingrowth	133,249	27	133,386	23
Growth on growing stock	366,864	73	446,171	77
Total net growth	500,113	100	579,557	100

growth rates remained unchanged between surveys – 5.8 percent of sawtimber inventory.

Mortality of growing-stock trees amounted to 60 million cubic feet in 1967, 0.5 percent of inventory. This is not a high mortality rate when compared with Michigan's 1965 rate of 1.6 percent. One reason for Wisconsin's lower mortality rate is its higher rate of timber removals than Michigan's. Wisconsin's 1967 removals rate was 2.1 percent of growing-stock inventory, but Michigan's 1965 rate was only 1.4 percent. Therefore, more dying trees probably were removed before they died in Wisconsin than in Michigan. Mortality amounted to 11 percent of the volume of growing-stock gross growth in 1967:

	1967 (Thousand cu. ft.)
Gross growth	560,026
Mortality	59,913
Net growth	500,113

One-fourth of the total volume of mortality of growing-stock trees in 1967 was attributable to quaking aspen alone, and half the total mortality volume was made up of three species – quaking aspen, elm, and northern red oak.

Diseases were the cause of half the volume of mortality. Weather, logging, insects, suppression by trees or other vegetation, and animals were other important causes of the death of trees. Hypoxylon canker of aspen and Dutch elm disease are two of the most serious diseases. In 1968 Dutch elm disease had spread to 56 of Wisconsin's 72 counties.

Mortality of sawtimber trees in 1967 was 8 percent of sawtimber gross growth:

	1967
	(Thousand bd. ft.)
Gross growth	1,375,071
Mortality	111,406
Net growth	1,263,665

Elm sustained the largest volume of sawtimber mortality – one-fifth of the State total. Three species account for nearly half the total mortality – elm, northern red oak, and hemlock.

Timber Removals About Half of Growth

Timber removals of growing stock (fig. 10) in 1967 were an estimated 233 million cubic feet compared with the 500 million cubic feet of net annual growth mentioned earlier. Timber removals include not only trees harvested, but trees cut or destroyed by thinnings, land clearing, or changes in land use. Sawtimber removals in 1967 were estimated to be 650 million board feet in comparison with 1,264 million board feet of net growth. Net growth of both growing stock and sawtimber in 1955 was also higher than removals. This continuing trend of growth over removals has, of course, caused inventories to build up between surveys.

Aspen growing-stock removals in 1967 amounted to 88 million cubic feet or 38 percent of the total, by far the largest proportion of any species. The red oaks were a distant second with 34 million cubic feet, followed by hard maple with 18 million cubic feet.

Two-thirds of the total removals came from the two northern survey units.

Sawtimber removals were generally similar to growing-stock removals in percentage by species and by survey unit.

Figure 10. – A mechanical feller-buncher harvesting trees in an aspen-birch stand. Aspen growing-stock removals accounted for 38 percent of the State total in 1967, which easily made it the leader among species. (Photo courtesy of Wisconsin Department of Natural Resources.)

Despite a generally rising total production from them, there were only 898 primary wood-using plants operating in 1967 in Wisconsin, compared with 1,753 in 1956. Only medium-sized[11] sawmills increased in number between surveys.

Wisconsin Topped Nation in Paper Production in 1967

That the pulp and paper industry in Wisconsin is highly important both to the Nation and to the State is attested to by the fact that in 1967 Wisconsin ranked second among all States in production of paper and board products (2.8 million tons).[12] Even more impressive was the State's production of paper in 1967 of 2.3 million tons which ranked first in the Nation and accounted for 11 percent of the country's total production. In 1958 Wisconsin ranked first in production of paper and board products with 2.1 million tons.

However, Wisconsin ranked only tenth among States in production of woodpulp in 1967. No exact figures are available on woodpulp imports[13] but when the 1967 woodpulp production of 1.4 million tons is compared with woodpulp consumption of 2.1 million tons, it is clear that a large amount is imported. Nearly half of the wood to operate Wisconsin's pulpmills is also imported (fig. 11). In 1967, of the 215.6 million cubic feet of pulpwood[14] received at pulpmills in the State, 106.0 million cubic feet were imported. Most of the imports came from neighboring Michigan and Minnesota, but about 30 million cubic feet came from western States and Canada.

The number of pulpmills declined slightly between surveys, from 29 in 1956 to 27 in 1967. Nine mills were located in the Central Unit, eight mills were found in southeastern Wisconsin, and seven in the Northeastern Unit. No pulpmills were located in southwestern Wisconsin, and only three were situated in the northwestern group of counties. Pulpmill capacity climbed from 3,900 tons per day in 1956 to 4,620[15] tons per day in 1967.

Sawmill Numbers Drop

Sawmills accounted for 91 percent (818) of the total number of primary wood-using plants in 1967. In 1956 sawmills made up 93 percent of the number of plants and were nearly twice as numerous (1,628). Most of the sawmills in both years were small – producing less than 1 million board feet of lumber annually. Only six sawmills in the State produced 5 million board feet or more of lumber annually in 1967, compared with eight mills in 1956. Five of the six large mills were located in northeastern Wisconsin. The total number of sawmills was divided rather evenly between Forest Survey Units, but a few more mills were located in southwestern and central Wisconsin.

Lumber production in the State amounted to 286 million board feet in 1967 and has remained generally constant since the last survey (fig. 12). The sawmill boom days peaked around 1899 when 3.4 billion board feet of lumber – the largest recorded volume in the State's history – was produced. From then until a Depression-time low of 120 million board feet, the trend of lumber production was one of sharp decline as the State's supply of old growth timber ebbed. Since 1932 there have been fluctuations in output of lumber, but the volume produced has not reached 500 million board feet.[16]

In 1967 more lumber (26 percent of the total volume) was sawn from red oaks[17] than from any other species. Sugar maple (16 percent), aspen (12 percent), and elm (11 percent) followed. All softwoods together amounted to only 10 percent of the lumber sawn.

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[11] *Sawmills with an annual lumber output of from 1 million to 4.999 million board feet.*

[12] *U.S. Bureau of the Census. Current Industrial Reports Series.*

[13] *Material brought into the State from any origin, chiefly from neighboring States.*

[14] *Includes round pulpwood and mill residues (mostly chips from sawmill slabs and edgings and from veneer cores).*

[15] *The capacity of one paper products company is not available and is excluded from the 4,620 tons per day capacity shown.*

[16] *No data is available on lumber production volumes from 1948-1953.*

[17] *Red oaks include all species listed under the select red oak and other red oak groups of the Principal Tree Species in Wisconsin section of the Appendix.*

Figure 11. – Pulpwood moving into the debarker at the American Can Company pulpmill at Wausau. It is natural that almost half the pulpwood received at Wisconsin pulpmills is from out of State because eastern Minnesota and upper Michigan are part of the timbershed for the State's pulp and paper industry. Markets for such material do not stop at State boundaries but extend to their economic limits.

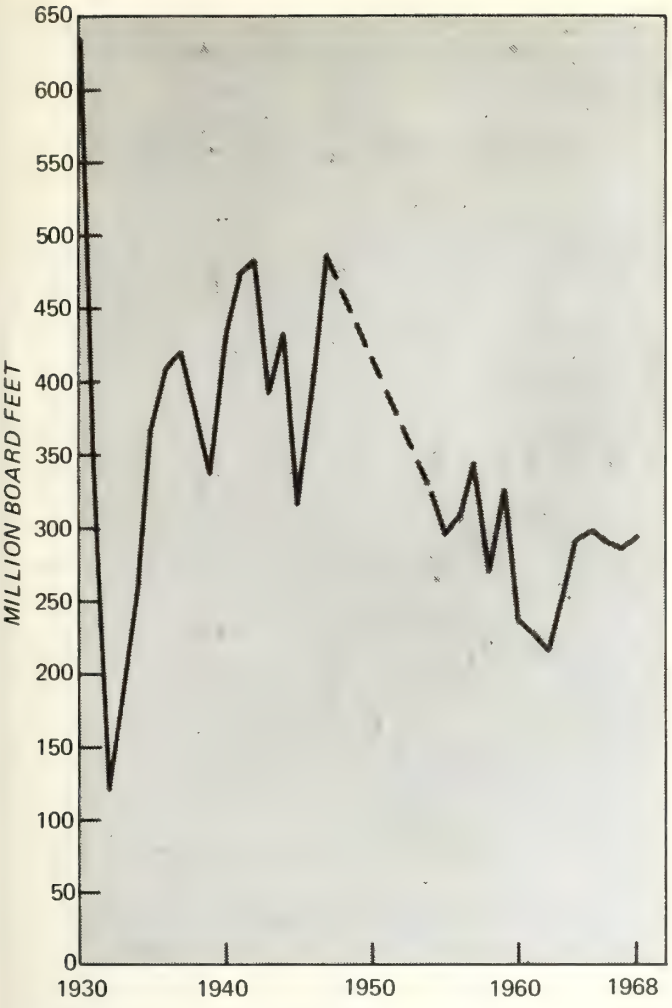

Figure 12. – Volume (lumber tally) of lumber produced in Wisconsin, 1930-1968. Figures are not available from 1948 to 1953.

The Northeastern Unit, led by Shawano County, produced more lumber in 1967 than any of the other units in the State (104 million board feet).

More Than Half of State's Veneer Mill Log Supply Comes from Neighboring Areas

The number of veneer mills fell from 47 in 1956 to 26 in 1967. Container veneer mill numbers declined the most, from 26 to 10. The capture of part of the veneer market for fruit and vegetable produce containers by paper and plastic materials is a major reason for this decline. Veneer mills are located primarily in eastern Wisconsin and in the Northwestern Unit.

The State's veneer mills used three-fourths of the veneer logs received at mills in the Lake States in 1967. Of the 42.2 million board feet of veneer logs processed in Wisconsin, only 20.5 million board feet were produced in the State. Michigan, Canada, and Minnesota provided most of the rest. A number of mills produce high-quality face and specialty veneers requiring fine hardwoods. Many of the logs required are brought into the State. For example, more yellow birch was consumed by Wisconsin veneer mills in 1967 than any other species (9.6 million board feet), but only about one-fifth of it (1.8 million board feet) was produced in the State. Canada shipped 4.2 million board feet of yellow birch veneer logs to Wisconsin. Slightly more than two-fifths of the 9.0 million board feet of hard maple veneer logs consumed came from Wisconsin. The rest were largely from Michigan.

Veneer log exports from Wisconsin amounted to 2.5 million board feet of a wide mixture of species. Significant is the 0.7 million board feet of black walnut that was shipped to Indiana and Iowa veneer mills. Only 33 thousand board feet of this highly prized wood that was produced in Wisconsin was used in the State's veneer mills.

The number of other primary mills declined between surveys at about the same rate as the above mills. Cooperage mills dipped from 5 to 3; charcoal plants from 4 to 2; and miscellaneous plants, including lath, particleboard, shaving, excelsior, fence, and specialty plants, fell from 40 to 22.

Impact of Forest Industries on the State's Economy Is Great

Wisconsin's wood-using industries are important contributors to the State's economy. All lumber and wood products manufacturing plants[18] and all paper and allied products plants[19] together accounted for 11 percent of the number of all employees and payrolls of manufacturing firms in the State in 1967.[20]

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[18] *U.S. Bureau of the Census. Standard Industrial Code 24. Includes logging camps and logging contractors, sawmills and planing mills, millwork, plywood and related products mills, wooden container mills, and miscellaneous wood products.*

[19] *U.S. Bureau of the Census. Standard Industrial Code 26. Includes pulpmills, paper mills (except building paper), paperboard plants, miscellaneous converted paper products mills, and plants producing paperboard containers and boxes.*

[20] *1967 Census of Manufactures.*

Considering only primary wood-using industries, a total of 1.3 million man-weeks[21] of work were provided in 1967 – 1.0 million man-weeks by pulp and paper mills alone. Three-fourths of the total employment is located in two units, the Central and Southeastern.

The value of logs and bolts (f.o.b. mill) harvested in Wisconsin in 1967 amounted to 39.7 million dollars. Pulpwood accounted for slightly better than half of the total value and lumber logs and bolts for about one-third. The value of roundwood harvested was highest in the Northeastern Unit (about 40 percent of the total) because timber removals for products were highest there also.

According to Bureau of the Census data,[22] logging camps and logging contractors paid 5.0 million dollars in payrolls in 1967, sawmills and planing mills paid 9.0 million, veneer and plywood plants paid 10.1 million, and paper and allied products[23] paid 300.3 million.

Value added by manufacture – the difference between the cost of goods purchased by an enterprise and the sales value of its product – is an economic indicator of the dollar-generating capacity of an industry. Logging camps and logging contractors added 9.9 million dollars in 1967, compared with 6.2 million in 1963, according to Bureau of the Census. Sawmills and planing mills added 17.0 million in 1967 compared with 15.7 million in 1963; veneer and plywood mills added 16.8 million in 1967 compared with 17.0 million in 1963. Value added by paper and allied products mills was 663.5 million in 1967 and 501.8 million in 1963.

Pulpwood Accounts for Biggest Share of Timber Products Output

Total timber products output[24] in 1967 was 199.9 million cubic feet, down about 20 percent from the 246.6 million cubic feet in 1956. Significant changes from 1956 were a 52 percent increase in output of pulpwood between surveys and a 70 percent decrease in fuelwood output.

Pulpwood accounted for 56 percent of the total timber products output. The 112 million cubic feet of pulpwood output in 1967 was 52 percent greater than the 74 million cubic feet output in 1956. Ninety percent of the 1967 pulpwood output came from growing-stock trees and 80 percent of the total was from hardwood trees, mostly aspen. The two northern units provided the bulk of the pulpwood output (83 percent).

Saw log and bolt output in 1967 made up 23 percent of the total timber products output. The 1967 volume of 45 million cubic feet was down significantly from the 55 million cubic feet in 1956. Hardwoods dominated with 90 percent of the saw log output. Select red oaks, hard maple, elm, aspen, and basswood were the leading saw log species. Even though total saw log output declined between surveys, the outputs of the Central and Southeastern Units increased somewhat.

The output of most other timber products dropped since the last survey. Some products, such as fuelwood and posts, fell to only a fraction of their 1956 volume, but a few, such as poles and pilings, gained a little.

The output of major roundwood products (total timber products output less plant residues) generally declined from 1946 to 1967 (fig. 13).

Total receipts of roundwood timber products at Wisconsin primary wood-using plants in 1967 (255 million cubic feet) remained nearly the same as in 1956 (254 million cubic feet). Receipts were greater than output in both survey years, but the difference was greatest in 1967 when the output was 156.7 million cubic feet. Wisconsin, then, is a net importer of roundwood. Pulpwood accounted for the largest share of imports in 1967. The State's pulpwood output of 103 million cubic feet was not sufficient alone to meet the 195 million cubic feet received at pulpmills.

Even though total receipts at primary plants remained static between surveys, the receipts of specific timber products varied considerably. Pulpwood gained but all other products[25] dropped. Veneer log receipts in 1967 fell to almost half the amount in 1956.

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[21] *Refers to all employees (not just production workers). A man-week is 40 hours of work by one person.*

[22] *1967 Census of Manufactures.*

[23] *Includes primary and secondary mills.*

[24] *Includes output from both roundwood and plant residues.*

[25] *Receipts of poles, piling, posts, and fuelwood are unknown and excluded from "all other products."*

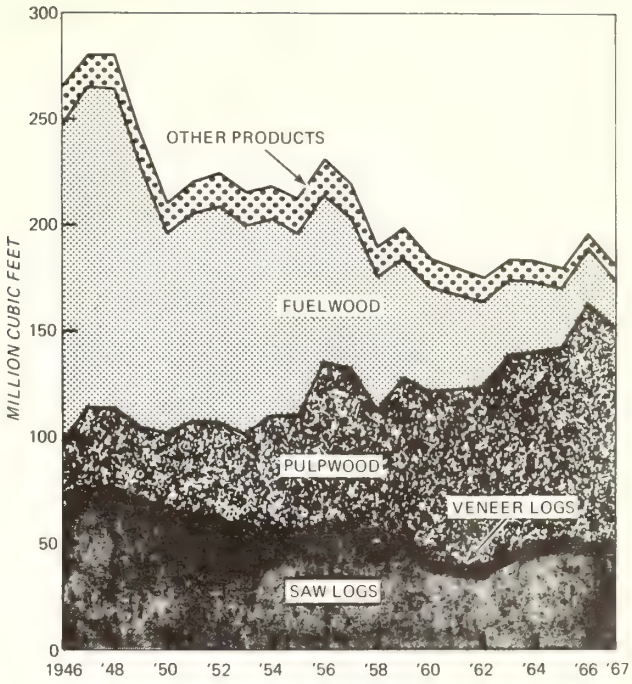

Figure 13. – Output of roundwood products in Wisconsin, 1946 to 1967. Points for some years are based on trend-level curves because survey data are not available for every year.

A LOOK INTO THE FUTURE

Recent Forest Service projections suggest that by the year 2000 the Nation's demand for industrial wood products (all roundwood products except fuelwood) from domestic forests may increase about 2.3 times present demand if the relative prices for wood products can be maintained.[26] The increase will not be the same for all timber products. For example, demand is projected to roughly double for saw logs and to nearly triple for veneer logs and pulpwood.

These prospective rising national demands will come during a period of generally shrinking commercial forest area, and possible important constraints on timber production brought on as a response to the mounting need to improve the environment and to promote multiple use of forest land.

The future of Wisconsin's timber resource undoubtedly will be shaped by the above as well as other pressures. Important questions are what the future timber supply in the State will be, and how it will relate to the needs of the Nation. As pointed out earlier, the growing-stock inventory increased 30 percent between 1956 and 1968. Three quarters of the volume is in hardwood trees – one-fifth of it in aspen trees alone. Also, growing-stock removals in 1967 were 47 percent of annual net growth.

One look at the State's possible forest situation 30 years hence is provided by computer-generated projections. Two such projections are presented; one assumes a high level of future timber removals and the other assumes a low level. Other assumptions common to both projections are: (1) the total area of commercial forest land will continue to decline modestly at an estimated rate of 0.141 percent per year; (2) radial growth as estimated from measurement of permanent plots during the last two surveys will decline over time in relation to the increase of basal area per acre of trees; (3) the intensity of forest management practiced will continue at the rate indicated by recent trends; and (4) that use of both hardwoods and softwoods for pulpwood will increase, but use of hardwoods will increase at a slower rate for most of the projection period.

[26] *Hair, Dwight, and H. O. Fleischer. Meeting growing demands for wood products. In [1971] Yearbook of Agriculture. U.S. Dep. Agric., p. 330-334. 1971.*

High Removals Option Projection

This projection is based on the assumption that timber removals for products will increase during the 30-year period, but at a decreasing rate each 10-year period. The initial removals rate for this option was higher than that for the low option, and the volume of removals is projected to be greater in every year than for the low option.

In general this projection shows increasing inventories of both growing stock and sawtimber (fig. 14), but the rate of increase drops off toward the end of the period – much more sharply for growing stock than for sawtimber. Growth and removals of growing stock almost meet in 1998 and for sawtimber they start to converge toward the end of the period.

Specifically, growth of growing stock, which amounted to 500 million cubic feet in 1968, is projected to peak about 1988 with 538 million cubic feet and to decline during the following decade to 528 million. At the same time timber removals, which were 233 million cubic feet in 1968, are projected to climb to 507 million in 1998. If the growth and removals curves were extended beyond 1998, they would cross at about the year 2000. The 1968 inventory of 11.0 billion cubic feet is projected to increase to 15.3 billion by 1988 and then to grow to only 16.0 billion in 1998 when the inventory curve almost flattens out. Should growth and removals become equal and remain so, the inventory curve would be a horizontal line.

Taken separately, the projections for softwoods and hardwoods show substantial differences. Softwood removals of growing stock are projected to jump from 30 million cubic feet in 1968 to 140 million in 1998, a 366 percent gain. Hardwood growing-stock removals, on the other hand, are projected to increase from 203 million cubic feet in 1968 to 367 million in 1998, only an 81 percent gain. Softwoods, which accounted for 13 percent of total removals in 1968, would make up 28 percent in 1998 under this projection. This reflects the assumed future faster rate of increase of softwood removals mentioned earlier.

Softwood growing-stock growth is projected to gain 15 percent between 1968 and 1998, compared with only 2 percent for hardwoods. Likewise softwood inventory would gain 73 percent during the same period, from 2.5 to 4.3 billion cubic feet, but hardwood inventory would increase only 38 percent, from 8.5 to 11.7 billion cubic feet.

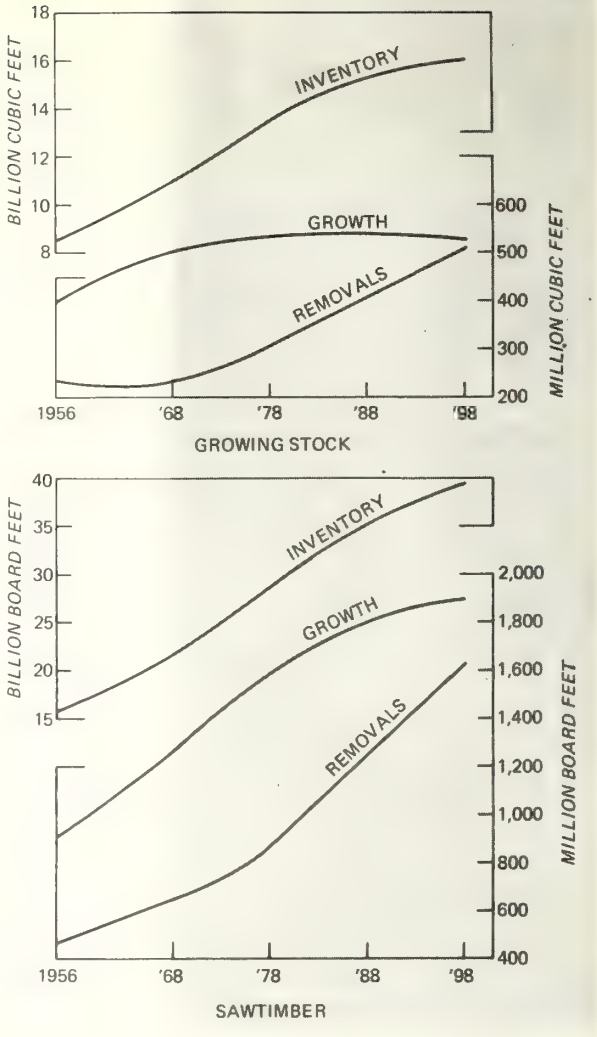

Figure 14. – Removals, net growth, and inventory of growing stock and sawtimber in Wisconsin, 1956 and 1968, and high removals option *projections for 1978-1998.*

Sawtimber projections of softwoods and hardwoods are similar to those above for growing stock. The major difference is that sawtimber growth for both species groups would increase substantially beyond that for growing stock. Softwood sawtimber growth is projected to rise 67 percent during the 30-year period compared with 15 percent for growing stock, and hardwood sawtimber growth would increase 44 percent compared with 2 percent for growing stock.

Low Removals Option Projection

As the name implies, this projection assumes a level of removals lower than the preceding projection. The assumption is also made that use of both softwoods and hardwoods for products will increase at an increasing rate each 10-year period. In general, the volume of removals is projected to be lower in every year of the period than for the high option, and growth and inventory volumes are projected higher.

This projection shows increasing inventories of both growing stock and sawtimber over the next 30 years with the rate of increase dropping off slightly toward the end of the period (fig. 15).

Growing-stock growth is projected to rise from 500 million cubic feet in 1968 to 552 million cubic feet in 1988, then drop to 545 million cubic feet in 1998. In spite of this tapering off of net growth, it would still be substantially above removals in 1998, although the growth and removals curves would intersect before another decade if they were extended. Timber removals of growing stock are projected to nearly double during the period, increasing from 233 million cubic feet in 1968 to 426 million cubic feet in 1998.

Growing-stock inventory would enlarge from 11.0 billion cubic feet in 1968 to 17.8 billion cubic feet in 1998 under the above conditions of growth excess. As the growth and removals curves approach each other toward the end of the projection period, the inventory curve begins to flatten out.

If softwoods and hardwoods are considered separately, the shape of the curves for each would be very similar to those shown in figure 15. There are, however, important differences in the projections for these two species groups. The average rate of increase of softwood growing-stock inventory would be almost twice that of hardwoods during the 30-year projection period – 3.2 percent per year for softwoods compared with 1.7 percent per year for hardwoods. The disparity is even wider for net annual growth volume, where the average annual increase for softwoods is projected to be 0.6 percent contrasted to 0.2 percent for hardwoods. Comparison of projected removals, however, shows the greatest difference between rates of increase for softwoods (8.9 percent per year) and hardwoods (1.9 percent per year). The softwood removal rate would be nearly 5 times the rate for hardwoods, reflecting the expected increased importance of softwoods in the State's future. Softwoods amounted to only 13 percent of the State's total removals volume in 1968, but are projected to represent 26 percent of the total by 1998. Growing-stock inventory, too, would be weighted more heavily to softwood species in the future, increasing from 23 percent of the total in 1968 to 27 percent in 1998.

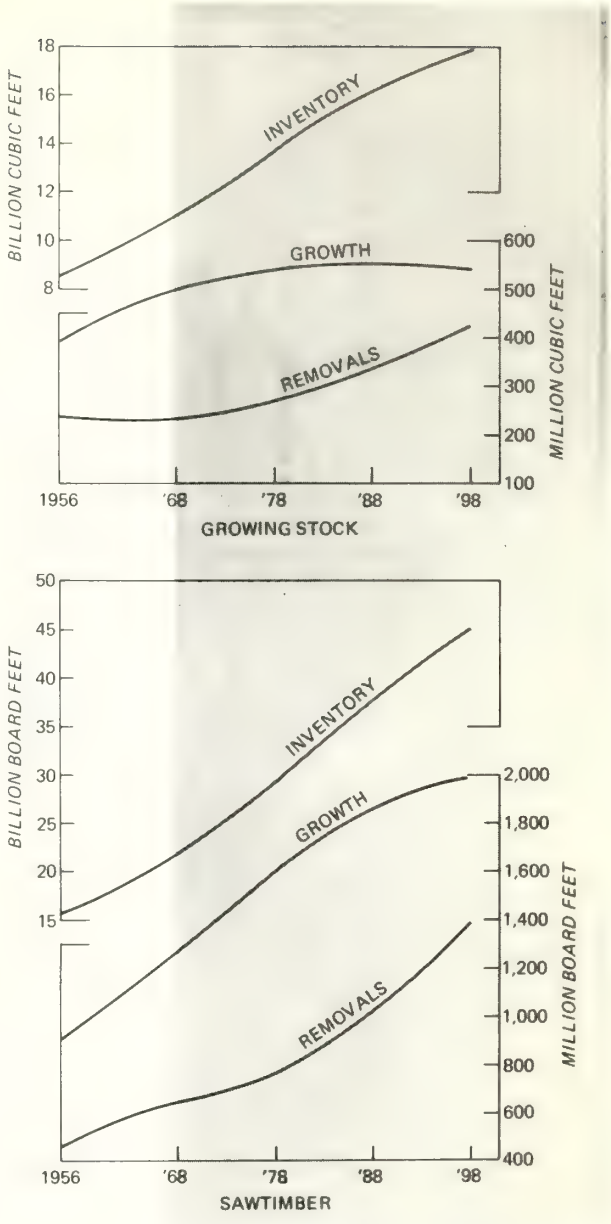

Figure 15. – Removals, net growth, and inventory of growing stock and sawtimber in Wisconsin, 1956 and 1968, and low removals option *projections for 1978-1998.*

The sawtimber projections show a much wider gap between growth and removals than do those for growing stock. Growth would remain far ahead of removals during the entire period, almost paralleling removals in the middle of the period and converging toward removals only in the last decade. Net annual sawtimber growth is projected to increase from 1,264 million board feet in 1968 to 1,997 million board feet in 1998, for an average gain of 1.9 percent per year. Sawtimber removals are projected to more than double during the period, from 650 million board feet in 1968 to 1,387 million board feet in 1998 – an average annual increase of 3.8 percent.

With the above forces impinging on each other, sawtimber inventory is projected to double from the 21.8 billion board feet in 1968 to 45.2 billion board feet in 1998. This would amount to an average annual increase of 3.6 percent, substantially higher than the 2.1 percent annual increase projected for growing-stock inventory. The faster rate of increase for sawtimber inventory is due to the expected continued general growth of trees into the larger diameter classes. As mentioned earlier, sapling and seedling stands dominated the commercial forest during the 1956 survey, and poletimber stands dominated in 1967. Sawtimber stands probably will dominate by 1998 and the increased proportion of sawtimber trees will mean a bigger increase in sawtimber inventory than in growing-stock inventory.

As with growing stock, when sawtimber projections for softwoods and hardwoods are considered separately, some significant differences appear. And, as with growing stock, the softwoods' growth, removals, and inventory are projected to increase at a faster rate than hardwoods, although the softwood volume of each will be less than that of hardwoods throughout the 30-year period.

Softwood sawtimber removals would demonstrate the fastest average annual increase rate of the three with 10.8 percent compared with only 2.5 percent for hardwoods. This high rate would translate into a much bigger share of the total volume of removals for softwoods – from 15 percent of the sawtimber total in 1968 to 30 percent in 1998. The average annual rate of increase for softwood sawtimber growth would be 2.5 percent compared with 1.7 percent for hardwoods. The softwood portion of the total growth volume would creep from 27 percent in 1968 to 30 percent in 1998. A somewhat faster rate of increase for softwood sawtimber inventory than for hardwoods results in a projected gain in the softwood portion of inventory from 30 percent of the total in 1968 to 32 percent in 1998.

Conclusions Drawn from Projections

Out of the above projections there emerge several obvious conclusions.

First, the timber resource is primarily hardwood (largely aspen) and will remain so in the foreseeable future. Because this is true, and because the State's timber economy is predominantly oriented toward pulpwood, Wisconsin will not figure prominently in helping to solve the Nation's forthcoming softwood building materials shortage.

Second, softwood inventories and timber removals will probably expand in the future. This projected mini-renaissance of softwoods will not manifest itself in a return to the Paul Bunyan days when white pine was king. Rather, it results largely from the considerable tree planting done in Wisconsin in the past, most of which favored red pine. Also, part comes from the buildup of shade-tolerant species, such as balsam fir, spruce, and hemlock, that replaced some of the past aspen-birch stands, as mentioned earlier. Probably more of the future increased demand for timber in the State will be met by softwoods.

In addition to the above, there are other changes that may occur in Wisconsin's forests and forest-related industries that are more difficult to predict. Certainly the boom in outdoor recreation and continuing public concern about environmental responsibilities and human amenities will have some impact on the extent and kind of timber harvesting. New harvesting systems, particularly whole-tree chipping in the woods, which is presently being done to a limited extent, will probably supplant older methods in many cases. These systems, though requiring large initial capital outlays, should reduce harvesting costs and help to keep wood products competitive with nonwood materials. Improved methods of transporting timber products to plant or mill seem likely, perhaps including delivery of chips by pipeline directly from the woods.

The intensity of forest management in the future, assumed to continue at the rate indicated by recent trends for the above projections, will probably increase. Cultural work, particularly thinning, probably will be performed over wider areas in stands managed for sawtimber (fig. 16). The increased growing space provided by thinning will help speed up tree growth. Fertilization of forests has also been shown to be effective in accelerating tree growth in other parts of the

Figure 16. – Commercial thinning in a red pine plantation in the Lincoln County Forest. Properly done, thinnings will help to reduce some of the 11 percent of the State's commercial forest area that is overstocked with live trees, and will remove some of the rough and rotten trees that represent 31 percent of the live trees in the State. Thinnings also may yield timber products, such as the pulpwood above. (Photo courtesy of Wisconsin Department of Natural Resources.)

country and probably will be practiced routinely on some land in the State in the future. More of the trees planted in the future will be grown from seeds harvested from genetically superior trees. Pulpwood growers probably will plant trees bred to maximize fiber yield and these trees may be harvested on extremely short rotations.

If the above management practices are to make significant changes in the State's forest situation, they will have to be performed on at least some of the farmer-owned and miscellaneous private commercial forest, which represents 59 percent of the total commercial area. Because such practices require large investments of time and money and may not yield a return for several years or even decades, many owners may be unable or unwilling to apply them. It may be necessary to offer new forms of incentives to encourage more intense management on these generally small holdings.

In summary, the rebuilding of Wisconsin's formerly deteriorated forests may be essentially completed within the next few decades as growth and inventory volumes approach the point of stabilization or even turn down. The hard-won lessons of the past should serve as a reminder of the need for continued thoughtful management to ensure a stable and healthy timber resource and economy.

APPENDIX

Accuracy of Survey

The forest area and timber inventory estimates in this report are based on a carefully designed sample of Wisconsin's forests. Because neither every acre nor every tree in the State was measured, the reported figures are best estimates. A measure of reliability of these estimates is given by a sampling error. Sampling errors (at the 68-percent probability level) have been calculated for commercial forest area, timber inventory, growth, and removals as percentages of the estimated State totals. Separate sampling errors for the latter three have been calculated for both growing stock and sawtimber volumes. Sampling errors may be interpreted as meaning that the chances are two out of three that if a 100-percent inventory had been taken, using the same methods, the results would have been within the limits indicated. For example, the estimated area of commercial forest land in Wisconsin in 1968, 14,536.8 thousand acres, has a sampling error of ±0.38 percent (±55.2 thousand acres). The commercial forest area from a 100-percent inventory, then, would be expected to fall between 14,481.6 and 14,592.0 thousand acres (14,536.8 ± 55.2), there being a one in three chance that this is not the case. Following are sampling errors for total estimated volume, net growth, and removals for both growing stock and sawtimber, and for area of commercial forest land during the 1968 Wisconsin Survey:

Item	*Wisconsin State totals*	*Sampling error*[27] *(Percent)*
Growing-stock:		
Volume	10,996.1 MM cu. ft.	0.86
Growth	500.1 MM cu. ft.	1.77
Removals	233.1 MM cu. ft.	3.96
Sawtimber:		
Volume	21,755.7 MM bd. ft.	1.81
Growth	1,263.7 MM bd. ft.	2.95
Removals	650.2 MM bd. ft.	3.85
Commercial forest land	14,536.8 M acres	.38

In addition to sampling errors, there may be other nonsampling errors due to mistakes in judgment, recording, calculation, and compilation. The magnitude of such errors cannot be determined. However, they are minimized through training, supervision, field checking, and complete editing and machine verification in compiling the data.

As survey data are broken down into units smaller than the State totals, the sampling error for such breakdowns increases. The smaller the breakdown, the larger the sampling error. For example, the sampling error for area of commercial forest land in a particular county is much higher than that for total commercial area in the State. An approximation of the increasing sampling error can be obtained from table 10, which shows the sampling error associated with estimates smaller than totals in Wisconsin.

Survey Procedure

This inventory of the forests of Wisconsin combines data furnished by the staffs of the Nicolet and Chequamegon National Forests for those forests and data gathered by personnel of the Wisconsin Department of Natural Resources and the North Central Forest Experiment Station on all other land. Permanent sample plots were established on the Nicolet National Forest in 1963 and remeasured in 1967. Similar plots on the Chequamegon National Forest were established in 1964. Data from both forests were updated to the current survey year. Forest Survey sample plots were measured from June 1967 to December 1969.

National Forest Land

A total of 117 ten-point variable-radius plots were originally established on the Nicolet National Forest, and 95 of these plots were remeasured to obtain growth data. On the Chequamegon National Forest 127 ten-point variable-radius plots were established. Annual growth data were estimated using regression equations with input from outside the National Forest.

Outside National Forest Land

A triple sampling design was used for land outside the National Forests. First, 320,815 points distributed systematically across aerial photos of the entire area were observed. These points were classified as either forest land (139,867) or nonforest land (180,948) in order to make a preliminary estimate of forest area. Next, 46,104 of the forest points were stereoclassified as to forest type,

[27] *At the 68-percent probability level.*

Table 10. – Sampling errors[1] for estimates smaller than State totals of volume, net growth, and removals, and of area of commercial forest land in Wisconsin, 1968

Sampling error (percent)	Commercial forest	Growing stock			Sawtimber		
		Inventory	Growth	Removals	Inventory	Growth	Removals
	Thousand acres	Million cubic feet			Million board feet		
1	2,071.5	8,132.7	1,566.8	3,656.5	71,233.6	10,997.0	9,638.3
2	517.9	2,033.2	391.7	914.1	17,808.4	2,749.3	2,409.6
3	230.2	903.6	174.0	406.3	7,914.8	1,221.9	1,070.9
4	129.5	508.3	97.9	228.5	4,452.1	687.3	602.4
5	82.9	325.3	62.7	146.3	2,849.3	439.9	385.5
10	20.7	81.3	15.7	36.6	712.3	110.0	96.4
15	9.2	36.1	7.0	16.3	316.5	48.9	42.8
20	5.2	20.3	3.9	9.1	178.0	27.5	24.1
25	3.3	13.0	2.5	5.9	113.9	17.6	15.4
50	.8	3.2	.6	1.5	28.4	4.4	3.8
100	.2	.8	.2	.4	7.1	1.0	.9

1/ At the 68-percent probability level.

stand-size class, and density. Then 6,419 points classed as forest and 7,960 points classed as nonforest were examined on the ground to correct the preliminary area estimate for errors in classification and for actual changes in land use since the photos were taken. At each of the 6,017 commercial forest locations, 10 variable-radius plots (37.5 basal area factor) were established uniformly over the sample acre.

Growth information on land outside the National Forests was obtained by remeasuring 105 one-fifth-acre circular plots in the three northern Forest Survey Units and 292 one-fifth-acre circular plots on which 10-point variable-radius plots were superimposed in the two southern units.

Mortality information was gained by counting trees that died within the last 3 years on newly established variable radius plots, then converting these trees to an annual volume of mortality.

Timber Utilization

Statistics on utilization in 1967 were obtained from mill surveys and wood utilization studies. The Wisconsin Department of Natural Resources conducted a canvass of resident sawmills, veneer mills, and other primary wood-using plants. The North Central Forest Experiment Station canvassed pulpmills and the mining industry in Wisconsin as well as out-of-State sawmills, pulpmills, and veneer mills to determine their use of timber from Wisconsin. Fuelwood and fencepost output was based on U.S. Census of Agriculture and Housing figures, a canvass of public and industrial timber owners, and estimates of mill residues used for fuelwood determined from a canvass of Wisconsin primary wood-using plants. Timber cut for products by owner class was determined by a canvass of all public and industrial timber owners. The portion of timber cut unaccounted for by the latter owners was grouped under "farmer and other owners."

To develop wood utilization factors used in converting timber products output to timber removals for saw logs, veneer logs, and pulpwood, 919 felled trees throughout the State were measured. Similar factors for cooperage logs and hardwood fenceposts were used from the 1960-61 Minnesota utilization study, and factors for all other products were used from the 1964-65 Michigan utilization study.

Definition of Terms

Land-Use Classes

Gross area–The entire area of land and water as determined by the Bureau of Census, 1960.

Land area The area of dry land and land temporarily or partially covered by water such as marshes, swamps, flood plains, streams, sloughs, and estuaries. Canals less than 1/8-mile wide, and lakes, reservoirs, and ponds smaller than 40 acres are included as land area. These figures are from the Bureau of Census, 1960.

Forest land – Land at least 16.7 percent stocked by forest trees of any size, or formerly having such tree cover, and not currently developed for nonforest use. Includes afforested areas. The minimum forest area classified was 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, and clearings in forest areas were classed as forest if less than 120 feet in width.

Commercial forest land – Forest land which is producing or is capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation. This includes areas suitable for growing crops of industrial wood generally of a site quality capable of producing in excess of 20 cubic feet per acre of annual growth. This includes both inaccessible and inoperable areas.

Noncommercial forest land – (a) Unproductive – forest land incapable of yielding crops of industrial wood because of adverse site conditions. (b) Productive-reserved forest land withdrawn from commercial timber use through statute or administrative regulation, or exclusively used for Christmas tree production.

Nonforest land – Land that has never supported forests, and land formerly forested where forest use is precluded by development for nonforest uses, such as cropland, improved pasture, residential areas, and city parks. Also includes improved roads and adjoining rights-of-way, powerline clearings, and certain areas of water classified by the Bureau of Census as land. Unimproved roads, streams, canals, and nonforest strips in forest areas must be more than 120 feet wide, and clearings in forest areas must be more than 1 acre in size, to qualify as nonforest land. "Cropland" and "pasture and range" figures were obtained from the Bureau of Census.

Ownership Classes

National forest – Federal land that has been designated by Executive Order or Statute as National Forests or purchase units, and other land under the administration of the Forest Service.

Indian – Tribal land held in fee by the Federal Government but administered for Indian tribal groups and Indian trust allotments.

Miscellaneous Federal – Federal land other than National Forest, Bureau of Land Management, and Indian land.

State, county, and municipal – Land owned by States, counties, or local public agencies, or land leased by them for more than 50 years.

Other public – All public land other than National Forests.

Forest industry – Land owned by companies or individuals operating wood-using plants.

Farmer-owned – Land owned by operators of farms. A farm must include 10 or more acres from which the sale of agricultural products totals $50 or more annually or, if less than 10 acres, the yield must be at least $250 annually.

Miscellaneous private – Privately owned land other than forest-industry or farmer-owned.

Tree Classes

All live trees – Growing-stock, rough, and rotten trees 1 inch d.b.h. and larger.

Growing-stock trees – All live trees of any size except rough and rotten trees.

Desirable trees – Growing-stock trees having no serious defects in quality limiting present or prospective use, and of relatively high vigor and containing no pathogens that may result in death or serious deterioration before rotation age. These are trees that would be favored by forest managers in silvicultural operations.

Acceptable trees – Trees meeting the standards for growing stock but not qualifying as desirable trees.

Sawtimber trees – Live trees of commercial species containing at least a 12-foot saw log or two noncontiguous saw logs, each 8 feet or longer, and having a maximum allowable defect of 67 percent of the gross tree volume. Softwoods must be at least 9.0 inches d.b.h. and hardwoods at least 11.0 inches.

Poletimber trees – Live trees of commercial species at least 5.0 inches d.b.h. but smaller than sawtimber size, and of good form and vigor.

Saplings – Live trees of commercial species 1.0 to 5.0 inches d.b.h. and of good form and vigor.

Seedlings – Live trees of commercial species less than 1.0 inch d.b.h. that are expected to survive according to regional standards. (Example of seedlings not expected to survive are those that are diseased or heavily damaged by logging, browsing, or fire.) Only softwood seedlings over 6 inches and hardwood seedlings over 1 foot in height are counted.

Rotten trees – Live trees (of any size) of commercial species that do not contain a merchantable 12-foot saw log, now or prospectively, because of rot (that is, when more than 50 percent of the cull volume of the tree is rotten).

Rough trees – Live trees (of any size) that do not contain at least one merchantable 12-foot saw log, now or prospectively, because of roughness, poor form, or noncommercial species.

Short-log trees (rough trees) – Sawtimber-sized trees of commercial species that contain at least one merchantable 8- to 11-foot saw log but not a 12-foot saw log.

Stocking

The degree of utilization of land by trees as measured in terms of basal area and/or the number of trees in a stand compared to the basal area and/or number of trees required to utilize fully the growth potential of the land.

A stocking percent of 100 indicates full utilization of the site and is equivalent to 80 square feet of basal area per acre in trees 5 inches d.b.h. and larger. In a stand of trees less than 5 inches d.b.h., a stocking percent of 100 would indicate that the present number of trees is sufficient to produce 80 square feet of basal area per acre when the trees do reach 5 inches d.b.h.

Stocking of all live trees, growing-stock trees, and desirable trees are recorded separately and stands are grouped into stocking classes.

Stocking Classes

Overstocked stands – Stands in which stocking of trees is 133 percent or more.

Fully stocked stands – Stands in which stocking of trees is from 100 to 133 percent.

Medium-stocked stands – Stands in which stocking of trees is from 60 to 100 percent.

Poorly stocked stands – Stands in which stocking of trees is from 16.7 to 60 percent.

Nonstocked areas – Commercial forest land on which stocking of trees is less than 16.7 percent.

Stand-Size Classes

Stand – A growth of trees on a minimum of 1 acre of forest land that is at least 16.7 percent stocked by forest trees of any size.

Sawtimber stands – Stands at least 16.7 percent stocked with growing-stock trees, with half or more of this stocking in sawtimber or poletimber trees and with sawtimber stocking at least equal to poletimber stocking.

Poletimber stands – Stands at least 16.7 percent stocked with growing-stock trees, and with half or more of this stocking in sawtimber and/or poletimber trees and with poletimber stocking exceeding that of sawtimber.

Sapling-seedling stands – Stands at least 16.7 percent stocked with growing-stock trees and with saplings and/or seedlings comprising more than half of this stocking.

Nonstocked areas – Commercial forest land on which stocking of growing-stock trees is less than 16.7 percent.

Area-Condition Classes

Class 10 –Areas fully stocked with desirable trees and not overstocked.

Class 20 – Areas fully stocked with desirable trees, but overstocked with all live trees.

Class 30 – Areas medium to fully stocked with desirable trees, and with less than 30 percent of the area controlled by other trees and/or inhibiting vegetation or surface conditions that will prevent occupancy by desirable trees.

Class 40 – Areas medium to fully stocked with desirable trees and with 30 percent or more of the area controlled by other trees and/or conditions that ordinarily prevent occupancy by desirable trees.

Class 50 – Areas poorly stocked with desirable trees, but fully stocked with growing-stock trees.

Class 60 – Areas poorly stocked with desirable trees, but with medium to full stocking of growing-stock trees.

Class 70 – Areas poorly stocked with desirable trees, and poorly stocked with growing-stock trees.

Other Land Classifications

Site index – An expression of forest site quality based on the height of a free-growing dominant or codominant tree of a representative species in the forest type at age 50.

Site classes – A classification of forest land in terms of inherent capacity to grow crops of industrial wood expressed in cubic-foot growth per acre per year.

Stand-age – Age of the main stand. Main stand refers to trees of the dominant forest type and stand-size class.

Basal area – The area in square feet of the cross section at breast height of a single tree. When the basal area of all the trees in a stand are summed, the result is usually expressed as square feet of basal area per acre.

Forest Types

A classification of forest land based upon the species forming a plurality of live-tree stocking. Major forest types in Wisconsin are:

Jack pine – Forests in which pine species comprise a plurality of the live tree stocking, with jack pine the most common. (Common associates include aspen, white birch, maple, balsam fir, cherry, and oak.)

Red pine – Forests in which pine species comprise a plurality of the live-tree stocking, with red pine the most common. (Common associates include aspen, white birch, maple, balsam fir, and red oak.)

White pine – Forests in which pine species comprise a plurality of the live-tree stocking, with eastern white pine the most common. (Common associates include hemlock, aspen, white and yellow birch, and maple.)

Balsam fir-white spruce – Forests in which balsam fir or white spruce, singly or in combination, comprise a plurality of the live-tree stocking. (Common associates include white-cedar, black spruce, tamarack, maple, birch, hemlock, and aspen.)

Black spruce – Forests in which swamp conifers (black spruce, tamarack, and northern white-cedar) comprise a plurality of the live-tree stocking, with black spruce the most common.

Northern white-cedar – Forests in which swamp conifers comprise a plurality of live-tree stocking, with northern white-cedar the most common.

Tamarack – Forests in which swamp conifers comprise a plurality of live-tree stocking, with tamarack the most common.

Oak-hickory – Forests in which upland oaks or hickories, singly or in combination, comprise a plurality of the live-tree stocking. (Common associates include aspen, cherry, balsam fir, elm, maple, and white birch.)

Elm-ash-cottonwood – Forests in which lowland elm, ash, or cottonwood, singly or in combination, comprise a plurality of the live-tree stocking. (Common associates include maple, basswood, and river birch.) These forests may be subtyped cottonwood when it is the most common species.

Maple-beech-birch – Forests in which maple, beech, yellow birch, or upland elm, singly or in combination, comprise a plurality of the live-tree stocking. (Common associates include hemlock, elm, basswood, white pine, and white and yellow birch.) Locally this type is called "northern hardwoods."

Aspen – Forests in which a mixture of quaking or bigtooth aspen, or balsam poplar, singly or in combination, comprise a plurality of the live-tree stocking. (Common associates include maple, white birch, balsam fir, red and northern pin oak, and cherry.)

Paper birch – Forests in which paper birch comprises a plurality of the live-tree stocking. (Common associates include aspen, maple, balsam fir, red and northern pin oak, and cherry.)

Timber Volume

Volume of growing stock – The volume of sound wood in the bole of sawtimber and poletimber trees from stump to a minimum of 4.0-inch top diameter outside bark, or to the point where the central stem breaks into limbs. Growing-stock volumes are shown in cubic feet but may be converted into solid-wood cords by dividing by 79.

Volume of sawtimber – Net volume of the saw log portion of live sawtimber trees in board feet, International 1/4-inch rule, from stump to a minimum 7 inches top diameter outside bark for softwoods and 9 inches for hardwoods.

Upper stem portion – That part of the bole of sawtimber trees above the merchantable top to a minimum top diameter of 4.0 inches outside bark or to the point where the central stem breaks into limbs.

Quality Classes

Tree grade – Classification of trees based on external characteristics as indicators of quality. Hardwood species were graded in accordance with "Hardwood Log Grades for Standard Lumber and How to Use Them" issued by the Forest Products Laboratory under the designation D1737A, 1961, and USDA Forest Service standards for hardwood tie and timber logs. The best 12-foot section of the lowest 16-foot hardwood log, or the best 12-foot upper section if the butt log did not meet minimum log-grade standards was graded.

Red pine was graded in accordance with "Interim Southern Pine Log Grades," USDA Forest Service, 1953. Eastern white pine was graded in accordance with USDA Forest Service "Log Grades for Eastern White Pine." All other softwoods were graded according to "Specifications for Log Grades of Hardwoods and Softwoods," Northern Hemlock and Hardwood Association, 1947. The lowest 16-foot log in softwood trees or a shorter log down to 12 feet if a 16-foot butt log was not present was graded.

Growth and Mortality

Net annual growth of growing stock – The annual change in volume of sound wood in live sawtimber and poletimber trees and the total volume of trees entering these classes through ingrowth, less volume losses resulting from natural causes.

Net annual growth of sawtimber – The annual change in volume of live sawtimber trees and the total volume of trees reaching sawtimber size, less volume losses resulting from natural causes.

Mortality of growing stock – The volume of sound wood in live sawtimber and poletimber trees dying annually from natural causes. Natural causes include fire, insects, disease, animal damage, weather, and suppression.

Mortality of sawtimber – The net board-foot volume of sawtimber trees dying annually from natural causes.

Timber Removals

Timber removals from growing stock – The volume of sound wood in live sawtimber and poletimber trees removed annually for forest products (including roundwood products and logging residues) and for other removals. Roundwood products are logs, bolts, or other round sections cut from trees. Logging residues are the unused portions of cut trees plus unused trees killed by logging. Other removals are growing-stock trees removed by cultural operations such as timber stand improvement work, and by land clearing and changes in land use.

Timber removals from sawtimber – The net board-foot volume of live sawtimber trees removed for forest products annually (including roundwood products and logging residues) and for other removals.

Timber products output – All timber products cut from roundwood, and byproducts of wood-manufacturing plants. Roundwood products include logs, bolts, or other round sections cut from growing-stock trees, cull trees, salvable dead trees, trees on nonforest land, noncommercial species, sapling-size trees, and limbwood. Byproducts from primary manufacturing plants include slabs, edgings, trimmings, miscuts, sawdust, shavings, veneer cores and clippings, and screenings of pulpmills that are used as pulp chips or other products.

Plant byproducts – Wood products, such as pulpwood chips, obtained incidental to production of other manufactured products.

Plant residues – Wood materials from manufacturing plants not utilized for some product.

Principal Tree Species in Wisconsin [28]

SOFTWOOD SPECIES

White and red pines:
- Eastern white pine . . . . . *Pinus strobus*
- Red pine . . . . . *Pinus resinosa*

Jack pine . . . . . *Pinus banksiana*

Spruce and balsam fir:
- White spruce . . . . . *Picea glauca*
- Black spruce . . . . . *Picea mariana*
- Balsam fir . . . . . *Abies balsamea*

Eastern hemlock . . . . . *Tsuga canadensis*

Other eastern softwoods:
- Tamarack . . . . . *Larix laricina*
- Northern white-cedar . . . *Thuja occidentalis*

Other softwoods
- Scotch pine . . . . . *Pinus sylvestris*
- Eastern redcedar . . . *Juniperus virginiana*
- Norway spruce . . . . . *Picea abies*

HARDWOOD SPECIES

Select white oaks:
- White oak . . . . . *Quercus alba*
- Bur oak . . . . . *Quercus macrocarpa*
- Chinkapin oak . . . . *Quercus muehlenbergii*
- Swamp white oak . . . . . *Quercus bicolor*

Select red oaks:
- Northern red oak . . . . . *Quercus rubra*

Other red oaks:
- Black oak . . . . . *Quercus velutina*
- Pin oak . . . . . *Quercus palustris*

Hickory:
- Bitternut hickory . . . . . *Carya cordiformis*
- Shagbark hickory . . . . . *Carya ovata*
- Yellow birch . . . . . *Betula alleghaniensis*

Hard maple:
- Black maple . . . . . *Acer nigrum*
- Sugar maple . . . . . *Acer saccharum*

Soft maple:
- Red maple . . . . . *Acer rubrum*
- Silver maple . . . . . *Acer saccharinum*

American beech . . . . . *Fagus grandifolia*

Ash:
- Black ash . . . . . *Fraxinus nigra*
- White ash . . . . . *Fraxinus americana*
- Green ash . . . . . *Fraxinus pennsylvanica*

Cottonwood and aspen:
- Balsam poplar . . . . . *Populus balsamifera*
- Bigtooth aspen . . . . *Populus grandidentata*
- Quaking aspen . . . . *Populus tremuloides*
- Eastern cottonwood . . . . *Populus deltoides*

American basswood . . . . . *Tilia americana*
Black walnut . . . . . *Juglans nigra*
Black cherry . . . . . *Prunus serotina*
American elm . . . . . *Ulmus americana*
Rock elm . . . . . *Ulmus thomasii*
Slippery elm . . . . . *Ulmus rubra*
Paper birch . . . . . *Betula papyrifera*
Butternut . . . . . *Juglans cinerea*

Other hardwoods:
- Hackberry . . . . . *Celtis occidentalis*
- American sycamore . . . *Platanus occidentalis*
- Red mulberry . . . . . *Morus rubra*
- Blackgum . . . . . *Nyssa sylvatica*
- Black willow . . . . . *Salix nigra*
- Boxelder . . . . . *Acer negundo*
- Honeylocust . . . . . *Gleditsia triacanthos*
- Black locust . . . . . *Robinia pseudoacacia*
- River birch . . . . . *Betula nigra*
- Northern catalpa . . . . . *Catalpa speciosa*

[28] *The common and scientific names are based on 'Check List of Native and Naturalized Trees of the United States (Including Alaska)" by Elbert L. Little, Jr., U.S. Dep. Agric., Agric. Handb. 41, 472 p. 1953.*

Tables[29]

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1. Commercial forest land area by stand-size class, 1956 and 1968 (see page 4)

2. Number of growing-stock trees on commercial forest land by diameter class, 1956 and 1968 (see page 5)

3. Area change between surveys, by stand-size class, Wisconsin, 1956-68, and Michigan, 1955-66 (see page 5)

4. Commercial forest area by forest type, 1956 and 1968 (see page 6)

5. Area of commercial forest land by site index class for selected forest types (see page 8)

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8. Percent of sawtimber trees by butt log grade and softwoods and hardwoods (see page 12)

9. Volume of net annual growth by components of growth, Wisconsin, 1967, and Michigan, 1965 (see page 13)

10. Sampling errors for estimates smaller than State totals of volume, net growth, and removals, and of area of commercial forest land (see page 25)

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13. Area of commercial forest land, by stand-size and ownership class, and Forest Survey Unit

14. Area of commercial forest land, by stand-volume and ownership class

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16. Area of commercial forest land, by area-condition and ownership class

17. Area of commercial forest land, by site and ownership class

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19. Area of noncommercial forest land, by forest type

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27. Area of commercial forest land, by forest type, stand-size, and site class

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29. Area of commercial forest land, by county and forest type

30. Area of noncommercial forest land, by ownership class

[29] *Tables containing growth, mortality, removals, and forest industry information are dated 1967. Tables containing forest area and timber inventory information are dated 1968 and represent conditions as of January 1, 1968, following changes to the area and inventory estimated to have occurred during calendar year 1967*

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31. Number of live trees on commercial forest land, by species and diameter class

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33. Number of growing-stock trees on commercial forest land, by species group, diameter class, and Forest Survey Unit

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39. Net volume of sawtimber on commercial forest land, by species and diameter class

40. Net volume of growing stock on commercial forest land, by species and Forest Survey Unit

41. Net volume of sawtimber on commercial forest land, by species and Forest Survey Unit

42. Net volume of growing stock on commercial forest land, by species and forest type

43. Net volume of sawtimber on commercial forest land, by species and forest type

44. Net volume of growing stock on commercial forest land, by county and species group

45. Net volume of sawtimber on commercial forest land, by county and species group

46. Net volume of growing stock, sawtimber, and rough, rotten, and short-log trees (cull) on commercial forest land, by species

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50. Net annual growth of sawtimber on commercial forest land, by species and diameter class

51. Net annual growth of growing stock on commercial forest land, by species and Forest Survey Unit

52. Net annual growth of sawtimber on commercial forest land, by species and Forest Survey Unit

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60. Net annual growth and removals of sawtimber on commercial forest land, by ownership class and softwoods and hardwoods

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61. Annual mortality of growing stock and sawtimber on commercial forest land, by species

62. Annual mortality of growing stock and sawtimber on commercial forest land, by ownership class and softwoods and hardwoods

63. Annual mortality of growing stock and sawtimber on commercial forest land, by cause and softwoods and hardwoods

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65. Output of roundwood products, by source and softwoods and hardwoods

66. A comparison of the number of primary wood-using plants operating in 1956 and 1967, by Forest Survey Unit

67. Volume of unused residues at primary manufacturing plants, by industry, type of residue, and softwoods and hardwoods

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69. Removals, net annual growth, and inventory of growing stock and sawtimber on commercial forest land, Wisconsin, 1968, and low removals option projections to 1998

70. Removals, net annual growth, and inventory of growing stock and sawtimber on commercial forest land, Wisconsin, 1968, and high removals option projections to 1998

Table 11. – Area by land class and Forest Survey Unit, Wisconsin, 1968
(Thousand acres)

Land class	All units	Northeastern	Northwestern	Central	Southwestern	Southeastern
Forest land:						
Commercial	14,536.8	4,062.0	5,246.4	2,831.8	1,493.1	903.5
Productive reserved	34.2	1.8	5.5	3.9	12.3	10.7
Unproductive	374.4	151.2	178.9	21.7	7.0	15.6
Total	14,945.4	4,215.0	5,430.8	2,857.4	1,512.4	929.8
Nonforest land:						
Cropland[1/]	12,043.3	751.4	1,043.0	2,489.7	2,935.5	4,823.7
Pasture and range	1,845.1	86.6	243.2	423.3	743.3	348.7
Other[2/]	6,024.7	628.8	1,220.5	1,430.9	987.9	1,756.6
Total	19,913.1	1,466.8	2,506.7	4,343.9	4,666.7	6,929.0
Total area[3/]	34,858.5	5,681.8	7,937.5	7,201.3	6,179.1	7,858.8

1/ Source: 1964 Census of Agriculture.

2/ Includes swampland, industrial and urban areas, other nonforest land, and 138,400 acres, classed as water by forest survey standards, but defined by the Bureau of the Census as land.

3/ Source: United States Bureau of the Census, Land and Water Area of the United States, 1960.

Table 12. – Area of commercial forest land, by ownership class and Forest Survey Unit, Wisconsin, 1968
(Thousand acres)

Ownership class	All units	Northeastern	Northwestern	Central	Southwestern	Southeastern
National Forest	1,317.7	575.9	741.8	--	--	--
Other Federal:						
Indian	156.5	53.5	97.5	4.0	0.2	1.3
Miscellaneous Federal	118.3	9.9	1.4	83.4	14.1	9.5
Total other Federal	274.8	63.4	98.9	87.4	14.3	10.8
State	568.0	210.3	185.8	105.9	20.0	46.0
County and municipal	2,365.7	665.2	1,281.7	405.4	4.3	9.1
Forest industry 1/	1,368.1	743.8	508.9	105.7	6.5	3.2
Farmer-owned	4,809.0	495.7	1,174.3	1,283.0	1,234.4	621.6
Miscellaneous private:						
Individual	3,343.3	1,146.8	1,088.8	756.2	179.6	171.9
Corporate	490.2	160.9	166.2	88.2	34.0	40.9
Total miscellaneous private	3,833.5	1,307.7	1,255.0	844.4	213.6	212.8
All ownerships	14,536.8	4,062.0	5,246.4	2,831.8	1,493.1	903.5

1/ Not including 60.6 thousand acres of farmer-owned and miscellaneous private lands leased to forest industry.

Table 13. – Area of commercial forest land, by stand-size and ownership class, and Forest Survey Unit, Wisconsin, 1968
(Thousand acres)

Stand-size class	All ownerships	National Forest	Other public	Forest industry	Farmer and miscellaneous private
All units:					
Sawtimber	3,098.4	84.3	406.6	346.2	2,261.3
Poletimber	6,579.5	749.2	1,636.5	599.0	3,594.8
Sapling and seedling	4,489.2	420.2	1,101.6	418.1	2,549.3
Nonstocked areas	369.7	64.0	63.8	4.8	237.1
All classes	14,536.8	1,317.7	3,208.5	1,368.1	8,642.5
Northeastern unit:					
Sawtimber	721.5	62.5	85.3	267.1	306.6
Poletimber	2,010.1	339.7	506.8	295.4	868.2
Sapling and seedling	1,276.2	158.5	332.5	178.6	606.6
Nonstocked areas	54.2	15.2	14.3	2.7	22.0
All classes	4,062.0	575.9	938.9	743.8	1,803.4
Northwestern unit:					
Sawtimber	642.6	21.8	244.0	52.9	323.9
Poletimber	2,829.3	409.5	827.9	263.0	1,328.9
Sapling and seedling	1,642.2	261.7	468.8	190.9	720.8
Nonstocked areas	132.3	48.8	25.7	2.1	55.7
All classes	5,246.4	741.8	1,566.4	508.9	2,429.3
Central unit:					
Sawtimber	551.8	--	44.0	20.4	487.4
Poletimber	1,100.6	--	272.2	37.6	790.8
Sapling and seedling	1,078.4	--	264.2	47.7	766.5
Nonstocked areas	101.0	--	18.3	--	82.7
All classes	2,831.8	--	598.7	105.7	2,127.4
Southwestern unit:					
Sawtimber	803.3	--	14.7	4.3	784.3
Poletimber	402.6	--	12.0	2.2	388.4
Sapling and seedling	238.1	--	10.4	--	227.7
Nonstocked areas	49.1	--	1.5	--	47.6
All classes	1,493.1	--	38.6	6.5	1,448.0
Southeastern unit:					
Sawtimber	379.2	--	18.6	1.5	359.1
Poletimber	236.9	--	17.6	.8	218.5
Sapling and seedling	254.3	--	25.7	.9	227.7
Nonstocked areas	33.1	--	4.0	--	29.1
All classes	903.5	--	65.9	3.2	834.4

Table 14. – Area of commercial forest land, by stand-volume and ownership class, Wisconsin, 1968
(Thousand acres)

Stand volume per acre[1/] (board feet)	All ownerships	National Forest	Other public	Forest industry	Farmer and miscellaneous private
Less than 1,500	9,928.2	894.5	2,461.3	815.1	5,757.3
1,500 to 5,000	3,606.8	353.4	603.6	354.8	2,295.0
More than 5,000	1,001.8	69.8	143.6	198.2	590.2
All classes	14,536.8	1,317.7	3,208.5	1,368.1	8,642.5

1/ International 1/4-inch rule.

Table 15. Area of commercial forest land, by stocking class based on selected stand components, Wisconsin, 1968
(Thousand acres)

Stocking percentage	Stocking classified in terms of					
	All trees	Growing-stock trees			Rough and rotten trees	Inhibiting vegetation
		Total	Desirable	Acceptable		
160+	168.2	55.3	—	7.1	--	--
150 to 160	184.2	49.0	--	10.6	--	--
140 to 150	565.8	160.7	--	93.0	--	--
133 to 140	733.9	256.3	—	148.7	1.4	--
130 to 133	408.5	142.7	--	82.7	.8	--
120 to 130	1,526.1	596.5	--	454.7	--	--
110 to 120	1,907.5	957.2	8.0	841.7	--	--
100 to 110	2,106.5	1,228.3	20.8	1,210.6	18.5	--
90 to 100	2,002.6	1,364.2	60.9	1,407.3	43.8	17.7
80 to 90	1,472.2	1,497.8	72.4	1,650.2	95.6	13.3
70 to 80	1,250.4	1,554.0	54.7	1,629.2	186.2	7.5
60 to 70	788.4	1,621.8	58.0	1,647.3	456.0	9.8
50 to 60	478.9	1,416.8	166.1	1,536.3	847.2	45.5
40 to 50	352.0	1,074.2	104.2	1,128.4	1,370.6	74.0
30 to 40	255.3	1,050.2	142.2	1,128.1	1,984.1	94.4
20 to 30	117.6	703.7	233.0	723.9	2,852.0	167.9
17 to 20	34.6	194.9	230.7	205.3	1,524.5	140.5
10 to 17	41.3	232.9	275.7	245.3	1,821.7	167.9
Less than 10	142.8	380.3	13,110.1	386.4	3,334.4	13,798.3
Total	14,536.8	14,536.8	14,536.8	14,536.8	14,536.8	14,536.8

Table 16. – Area of commercial forest land, by area-condition and ownership class, Wisconsin, 1968
(Thousand acres)

Area-condition class	All ownerships	National Forest	Other public	Forest industry	Farmer and miscellaneous private
10	16.4	16.4	--	--	--
20	28.8	28.8	--	--	--
30	229.9	227.4	—	0.2	2.3
40	482.8	480.4	—	--	2.4
50	3,344.3	416.1	723.6	532.4	1,672.2
60	5,700.4	84.6	1,497.2	570.4	3,548.2
70	4,734.2	64.0	987.7	265.1	3,417.4
All classes	14,536.8	1,317.7	3,208.5	1,368.1	8,642.5

Table 17. – Area of commercial forest land, by site and ownership class, Wisconsin, 1968
(Thousand acres)

Site class (cubic feet)	All owners	National Forest	Other public	Forest industry	Farmer and miscellaneous private
165 or more	15.3	1.8	1.7	0.3	11.5
120 to 165	168.7	17.5	39.7	28.1	83.4
85 to 120	1,489.5	206.2	304.0	134.7	844.6
50 to 85	5,189.1	733.4	1,208.4	491.1	2,756.2
Less than 50	7,674.2	358.8	1,654.7	713.9	4,946.8
All classes	14,536.8	1,317.7	3,208.5	1,368.1	8,642.5

Table 18. – Area of commercial forest land, by forest types and ownership class, Wisconsin, 1968
(Thousand acres)

Forest types	All ownerships	National Forest	Other public	Forest industry	Farmer and miscellaneous private
Jack pine	727.6	57.3	249.3	113.0	308.0
Red pine	310.2	77.6	79.9	37.6	115.1
White pine	177.6	19.5	37.3	18.2	102.6
Balsam fir-white spruce	628.0	116.4	155.1	96.9	259.6
Black spruce	235.9	30.4	56.4	46.9	102.2
Northern white-cedar	302.4	83.5	47.1	31.0	140.8
Tamarack	222.2	7.9	59.4	13.8	141.1
Oak-hickory	2,664.9	29.5	326.0	86.5	2,222.9
Elm-ash-cottonwood	1,157.6	41.5	267.1	101.3	747.7
Maple-beech-birch	3,521.6	417.6	603.7	468.3	2,032.0
Aspen	3,664.6	324.3	1,116.2	303.1	1,921.0
Paper birch	554.5	48.2	147.2	46.7	312.4
Nonstocked	369.7	64.0	63.8	4.8	237.1
All types	14,536.8	1,317.7	3,208.5	1,368.1	8,642.5

Table 19. – Area of noncommercial forest land, by forest type, Wisconsin, 1968
(Thousand acres)

Forest type	All areas	Productive reserve areas	Unproductive areas
Jack pine	5.4	0.5	4.9
Red pine	4.5	2.2	2.3
White pine	2.5	.2	2.3
Balsam fir-white spruce	22.2	.6	21.6
Black spruce	127.2	—	127.2
Northern white-cedar	16.5	--	16.5
Tamarack	53.8	--	53.8
Oak-hickory	25.3	13.9	11.4
Elm-ash-cottonwood	104.3	1.7	102.6
Maple-beech-birch	10.3	7.4	2.9
Aspen	21.5	6.7	14.8
Paper birch	2.4	--	2.4
Nonstocked	12.7	1.0	11.7
All types	408.6	34.2	374.4

Table 20. – Area of land and forest land by county, Wisconsin, 1968

County	Land area	Forest land			Commercial forest as a percent of land area
		All forest	Non-commercial	Commercial	
	(Thousand acres)				(percent)
Adams	413.6	252.9	2.1	250.8	61
Ashland	664.2	548.0	21.4	526.6	79
Barron	553.1	155.0	2.1	152.9	28
Bayfield	934.3	789.5	12.2	777.3	83
Brown	335.6	37.6	.7	36.9	11
Buffalo	454.8	166.9	1.0	165.9	36
Burnett	537.8	324.6	7.3	317.3	59
Calumet	206.3	26.7	1.2	25.5	12
Chippewa	651.3	213.9	2.5	211.4	32
Clark	781.5	279.8	3.0	276.8	35
Columbia	496.5	82.9	.8	82.1	16
Crawford	363.3	131.5	.7	130.8	36
Dane	766.9	74.6	.3	74.3	10
Dodge	569.0	43.5	.8	42.7	8
Door	314.5	105.2	9.0	96.2	31
Douglas	835.0	631.9	21.0	610.9	73
Dunn	545.8	139.3	.3	139.0	25
Eau Claire	414.3	158.9	1.4	157.5	38
Florence	311.9	269.3	6.6	262.7	84
Fond du Lac	463.9	50.6	1.9	48.7	10
Forest	644.7	549.5	21.8	527.7	82
Grant	734.1	150.5	2.9	147.6	20
Green	374.2	31.8	.5	31.3	8
Green Lake	226.8	28.1	.4	27.7	12
Iowa	487.9	123.9	3.1	120.8	25
Iron	478.1	389.5	15.6	373.9	78
Jackson	639.3	348.7	3.2	345.5	54
Jefferson	361.0	33.0	.9	32.1	9
Juneau	495.4	240.7	1.1	239.6	48
Kenosha	174.3	9.9	--	9.9	6
Kewaunee	211.0	32.1	1.2	30.9	15
La Crosse	288.5	94.7	.4	94.3	33
Lafayette	411.5	34.9	.3	34.6	8
Langlade	548.1	395.9	13.7	382.2	70
Lincoln	570.8	413.3	14.2	399.1	70
Manitowoc	377.3	61.3	1.0	60.3	16
Marathon	1,015.2	377.8	4.0	373.8	37
Marinette	881.8	675.7	25.8	649.9	74
Marquette	291.2	101.2	1.3	99.9	34
Milwaukee	151.4	--	--	--	--
Monroe	585.3	219.4	.9	218.5	37
Oconto	640.2	365.4	7.7	357.7	56
Oneida	711.4	604.0	37.4	566.6	80
Outagamie	406.0	69.9	.8	69.1	17
Ozaukee	150.8	15.1	.4	14.7	10
Pepin	150.2	44.3	.2	44.1	29
Pierce	377.7	62.9	.3	62.6	17
Polk	595.8	222.6	4.6	218.0	37
Portage	515.9	160.8	1.3	159.5	31
Price	806.4	655.2	47.0	608.2	75
Racine	215.4	15.2	.5	14.7	7
Richland	373.2	104.2	1.0	103.2	28
Rock	461.4	31.7	1.0	30.7	7
Rusk	579.5	336.1	7.0	329.1	57
St. Croix	470.3	49.9	.4	49.5	11
Sauk	538.4	156.5	4.4	152.1	28
Sawyer	806.1	644.8	23.4	621.4	77
Shawano[1/]	818.3	496.1	10.7	485.4	59
Sheboygan	323.4	48.2	1.3	46.9	14
Taylor	624.2	381.5	12.5	369.0	59
Trempealeau	470.3	111.1	1.8	109.3	23
Vernon	513.1	141.8	2.5	139.3	27
Vilas	554.6	445.8	15.1	430.7	78
Walworth	356.2	26.6	1.0	25.6	7
Washburn	523.0	352.1	10.3	341.8	65
Washington	274.5	36.8	.7	36.1	13
Waukesha	355.5	47.9	1.5	46.4	13
Waupaca	480.3	166.4	2.2	164.2	34
Waushara	401.5	119.3	1.0	118.3	29
Winnebago	286.9	21.1	.4	20.7	7
Wood	516.5	217.6	1.6	216.0	42
Total	34,858.5	14,945.4	408.6	14,536.8	42

1/ Shawano county includes Menominee county.

Table 21. – Area of commercial forest land, by forest type, stand-size class, and Forest Survey Unit, Wisconsin, 1968
(Thousand acres)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Non-stocked areas
All Units:					
Jack pine	727.6	45.0	360.3	322.3	—
Red pine	310.2	46.8	90.6	172.8	--
White pine	177.6	115.6	25.7	36.3	--
Balsam fir-white spruce	628.0	48.9	345.2	233.9	--
Black spruce	235.9	6.8	40.4	188.7	--
Northern white-cedar	302.4	43.7	180.7	78.0	--
Tamarack	222.2	4.8	89.5	127.9	--
Oak-hickory	2,664.9	1,028.3	1,046.3	590.3	--
Elm-ash-cottonwood	1,157.6	345.0	498.2	314.4	—
Maple-beech-birch	3,521.6	1,254.8	1,599.9	666.9	—
Aspen	3,664.6	138.8	1,937.8	1,588.0	--
Paper birch	554.5	19.9	364.9	169.7	—
Nonstocked	369.7	--	--	--	369.7
All types	14,536.8	3,098.4	6,579.5	4,489.2	369.7
Northeastern Unit:					
Jack pine	130.7	18.3	68.9	43.5	--
Red pine	122.2	24.9	30.4	66.9	—
White pine	64.1	46.1	7.0	11.0	--
Balsam fir-white spruce	310.0	29.2	158.4	122.4	--
Black spruce	132.1	5.9	21.0	105.2	-
Northern white-cedar	166.8	14.1	107.6	45.1	-
Tamarack	68.6	--	33.8	34.8	—
Oak-hickory	212.2	51.3	100.3	60.6	—
Elm-ash-cottonwood	261.4	81.1	118.2	62.1	-
Maple-beech-birch	1,189.1	407.7	578.3	203.1	-
Aspen	1,196.0	32.1	673.7	490.2	--
Paper birch	154.6	10.8	112.5	31.3	-
Nonstocked	54.2	--	--	--	54.2
All types	4,062.0	721.5	2,010.1	1,276.2	54.2
Northwestern Unit:					
Jack pine	319.4	13.4	183.6	122.4	—
Red pine	91.8	14.4	30.6	46.8	—
White pine	45.7	30.6	12.7	2.4	-
Balsam fir-white spruce	298.5	19.7	175.2	103.6	--
Black spruce	94.8	.9	19.4	74.5	--
Northern white-cedar	74.0	21.1	41.5	11.4	—
Tamarack	101.5	1.8	45.5	54.2	--
Oak-hickory	443.5	77.7	258.9	106.9	—
Elm-ash-cottonwood	419.7	83.5	230.4	105.8	--
Maple-beech-birch	1,380.5	319.9	772.5	288.1	—
Aspen	1,604.4	58.1	876.4	669.9	—
Paper birch	240.3	1.5	182.6	56.2	-
Nonstocked	132.3	--	--	--	132.3
All types	5,246.4	642.6	2,829.3	1,642.2	132.3

(Continued on next page)

Table 21 continued

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Non-stocked areas
Central Unit:					
Jack pine	255.7	13.3	103.1	139.3	--
Red pine	68.6	7.5	20.1	41.0	--
White pine	59.5	35.6	6.0	17.9	--
Balsam fir-white spruce	14.1	--	8.9	5.2	--
Black spruce	9.0	--	--	9.0	--
Northern white-cedar	11.1	--	8.3	2.8	--
Tamarack	43.6	3.0	4.8	35.8	--
Oak-hickory	861.6	217.9	375.5	268.2	--
Elm-ash-cottonwood	217.5	69.4	70.3	77.8	--
Maple-beech-birch	390.6	175.4	136.4	78.8	--
Aspen	688.4	23.9	326.4	338.1	--
Paper birch	111.1	5.8	40.8	64.5	--
Nonstocked	101.0	--	--	--	101.0
All types	2,831.8	551.8	1,100.6	1,078.4	101.0
Southwestern Unit:					
Jack pine	21.8	--	4.7	17.1	--
Red pine	23.4	--	7.9	15.5	--
White pine	2.6	2.6	--	--	--
Balsam fir-white spruce	--	--	--	--	--
Black spruce	--	--	--	--	--
Northern white-cedar	--	--	--	--	--
Tamarack	--	--	--	--	--
Oak-hickory	867.9	502.6	260.3	105.0	--
Elm-ash-cottonwood	93.7	58.6	13.1	22.0	--
Maple-beech-birch	324.9	219.2	65.7	40.0	--
Aspen	75.0	20.3	24.6	30.1	--
Paper birch	34.7	--	26.3	8.4	--
Nonstocked	49.1	--	--	--	49.1
All types	1,493.1	803.3	402.6	238.1	49.1
Southeastern Unit:					
Jack pine	--	--	--	--	--
Red pine	4.2	--	1.6	2.6	--
White pine	5.7	.7	--	5.0	--
Balsam fir-white spruce	5.4	--	2.7	2.7	--
Black spruce	--	--	--	--	--
Northern white-cedar	50.5	8.5	23.3	18.7	--
Tamarack	8.5	--	5.4	3.1	--
Oak-hickory	279.7	178.8	51.3	49.6	--
Elm-ash-cottonwood	165.3	52.4	66.2	46.7	--
Maple-beech-birch	236.5	132.6	47.0	56.9	--
Aspen	100.8	4.4	36.7	59.7	--
Paper birch	13.8	1.8	2.7	9.3	--
Nonstocked	33.1	--	--	--	33.1
All types	903.5	379.2	236.9	254.3	33.1

Table 22. – Area of commercial forest land, by forest type and stand-age class, Wisconsin, 1968
(Thousand acres)

Forest type	All ages	Stand-age class (years)											
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-119	120+
Jack pine	727.6	70.2	131.7	193.6	192.0	94.1	33.2	12.6	0.2	--	-	-	—
Red pine	310.2	85.9	70.4	82.0	25.6	9.1	13.3	13.4	3.0	4.7	2.8	--	--
White pine	177.6	11.3	13.0	12.9	16.8	21.5	17.7	24.8	14.1	18.8	6.4	7.6	12.7
Balsam fir-white spruce	628.0	36.1	71.6	75.3	111.3	178.1	101.8	25.6	14.2	2.3	5.0	4.2	2.2
Black spruce	235.9	4.9	11.5	23.1	51.4	55.5	46.1	24.2	8.5	.7	2.3	6.0	1.7
Northern white-cedar	302.4	1.5	8.9	15.3	21.3	36.4	39.2	50.0	24.6	44.4	10.4	21.6	28.8
Tamarack	222.2	37.7	35.9	17.8	11.3	37.5	35.2	22.5	12.9	3.8	5.9	1.7	--
Oak-hickory	2,664.9	267.8	154.6	136.5	362.3	409.9	316.7	234.9	186.8	182.3	145.7	178.5	88.9
Elm-ash-cottonwood	1,157.6	116.1	78.6	97.1	150.6	130.2	156.7	154.2	74.3	70.2	45.4	56.5	27.7
Maple-beech-birch	3,521.6	179.6	176.7	221.4	434.1	634.1	551.9	300.1	230.0	192.0	163.0	192.5	246.2
Aspen	3,664.6	714.4	585.8	509.4	1,069.4	594.8	136.7	36.9	8.6	4.3	4.3	--	--
Paper birch	554.5	52.4	51.7	72.2	131.2	137.4	80.8	18.7	2.3	6.3	-	1.5	-
Nonstocked	369.7	168.9	38.1	33.5	33.4	23.5	21.3	9.7	22.3	7.5	2.8	8.7	--
All types	14,536.8	1,746.8	1,428.5	1,490.1	2,610.7	2,362.4	1,550.6	927.6	601.8	537.3	394.0	478.8	408.2

Table 23. – Area of commercial forest land, by forest type and area-condition class, Wisconsin, 1968
(Thousand acres)

Forest type	All area conditions	Class 10	Class 20	Class 30	Class 40	Class 50	Class 60	Class 70
Jack pine	727.6	--	0.6	5.1	12.8	138.4	332.5	238.2
Red pine	310.2	--	1.7	20.3	17.4	98.0	128.8	44.0
White pine	177.6	--	.5	3.8	1.1	86.1	50.8	35.3
Balsam fir-white spruce	628.0	6.4	—	28.9	37.7	206.8	249.6	98.6
Black spruce	235.9	—	1.2	2.7	16.3	84.4	98.6	32.7
Northern white-cedar	302.4	--	7.9	17.8	35.6	130.0	84.6	26.5
Tamarack	222.2	--	--	.1	7.6	42.1	110.9	61.5
Oak-hickory	2,664.9	2.8	.3	4.9	12.2	352.7	982.0	1,310.0
Elm-ash-cottonwood	1,157.6	--	.3	4.7	26.1	227.3	429.8	469.4
Maple-beech-birch	3,521.6	7.2	8.4	102.9	167.3	1,091.5	1,411.9	732.4
Aspen	3,664.6	--	7.3	35.7	118.1	743.7	1,605.5	1,154.3
Paper birch	554.5	—	.6	3.0	30.6	143.3	215.4	161.6
Nonstocked	369.7	--	--	--	--	--	--	369.7
All types	14,536.8	16.4	28.8	229.9	482.8	3,344.3	5,700.4	4,734.2

Table 24. – Area of commercial forest land, by forest type and site-index class, Wisconsin, 1968
(Thousand acres)

Forest type	All sites	Site index class (height in feet at 50 years)							
		20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99
Jack pine	727.6	0.1	32.9	167.8	335.9	163.2	27.7	--	--
Red pine	310.2	--	4.9	6.5	135.6	104.0	51.0	8.2	--
White pine	177.6	--	2.0	45.5	70.2	41.2	17.2	1.5	--
Balsam fir-white spruce	628.0	21.4	78.4	145.6	248.4	102.8	30.6	.8	--
Black spruce	235.9	107.4	85.9	33.0	8.7	.9	--	--	--
Northern white-cedar	302.4	146.5	102.7	37.4	11.8	4.0	--	--	--
Tamarack	222.2	31.6	69.8	64.8	37.5	15.9	2.6	--	--
Oak-hickory	2,664.9	6.6	194.9	642.0	881.0	599.7	260.1	68.4	12.2
Elm-ash-cottonwood	1,157.6	17.7	113.6	291.3	366.0	213.5	103.7	42.0	9.8
Maple-beech-birch	3,521.6	--	52.6	328.5	1,146.4	1,332.0	554.1	101.9	6.1
Aspen	3,664.6	2.0	52.0	301.7	828.6	1,201.0	940.3	285.7	53.3
Paper birch	551.5	1.9	20.4	51.3	165.2	212.7	83.4	19.6	--
Nonstocked	369.7	11.2	75.2	118.7	94.9	54.4	15.3	--	--
All types	14,536.8	346.4	885.3	2,234.1	4,330.2	4,045.3	2,086.0	528.1	81.4

Table 25. – Area of commercial forest land, by stocking class of growing-stock trees and stand-size class, Wisconsin, 1968
(Thousand acres)

Stocking percentage	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
133 or more	521.3	142.0	296.7	82.6	--
100 to 133	2,924.7	754.0	1,618.7	552.0	--
60 to 100	6,037.8	1,209.2	3,034.3	1,794.3	--
17 to 60	4,439.8	973.9	1,572.1	1,893.8	--
Less than 17	613.2	19.3	57.7	166.5	369.7
All classes	14,536.8	3,098.4	6,579.5	4,489.2	369.7

Table 26. – Area of commercial forest land, by forest type and basal area class, Wisconsin, 1968
(Thousand acres)

Forest type	All classes	Basal area class (square feet per acre)									
		0-19	20-39	40-59	60-79	80-99	100-119	120-139	140-159	160-179	180+
Jack pine	727.6	68.7	132.6	204.6	143.9	119.6	33.8	16.7	7.7	--	--
Red pine	310.2	74.4	55.2	46.0	34.7	30.5	30.2	21.0	4.6	8.4	5.2
White pine	177.6	17.2	7.0	33.0	23.4	31.3	23.9	19.1	7.5	11.9	3.3
Balsam fir-white spruce	628.0	58.0	68.6	121.8	113.1	76.4	102.3	55.6	24.5	2.7	5.0
Black spruce	235.9	35.8	50.8	74.6	34.9	22.1	9.1	8.2	.4	--	--
Northern white-cedar	302.4	11.7	14.5	16.8	46.5	37.9	31.4	60.1	26.6	28.4	28.5
Tamarack	222.2	58.6	49.1	49.8	32.9	19.2	5.8	3.4	3.4	--	--
Oak-hickory	2,664.9	121.0	192.6	536.3	627.8	562.4	415.9	144.0	43.9	18.4	2.6
Elm-ash-cottonwood	1,157.6	99.4	153.6	210.5	189.1	179.0	171.6	82.3	31.6	25.7	14.8
Maple-beech-birch	3,521.6	61.7	178.6	453.4	581.4	811.2	781.7	353.6	210.0	59.7	30.3
Aspen	3,664.6	465.3	676.1	911.3	646.6	421.9	320.0	166.1	30.2	19.9	7.2
Paper birch	554.5	46.1	95.8	92.3	99.8	97.3	75.1	41.5	1.2	1.4	—
Nonstocked	369.7	273.4	52.2	30.8	11.2	2.0	.1	--	--	--	--
All types	14,536.8	1,391.3	1,726.7	2,781.2	2,585.3	2,410.8	2,000.9	971.6	394.6	177.5	96.9

Table 27. – Area of commercial forest land, by forest type, stand-size, and site class, Wisconsin, 1968
(Thousand acres)

Forest type and stand-size class	All site classes	165 cu. ft. or more	120 to 165 cu. ft.	85 to 120 cu. ft.	50 to 85 cu. ft.	Less than 50 cu. ft.
White-red-jack pine:						
Sawtimber	207.4	3.5	37.4	58.0	77.4	31.1
Poletimber	476.6	3.5	3.1	46.5	174.4	249.1
Sapling and seedling	531.4	4.8	17.2	86.1	161.2	262.1
All stands	1,215.4	11.8	57.7	190.6	413.0	542.3
Spruce-fir:						
Sawtimber	104.2	--	14.9	21.7	13.1	54.5
Poletimber	655.8	--	24.1	163.9	223.0	244.8
Sapling and seedling	628.5	--	39.1	82.5	168.7	338.2
All stands	1,388.5	--	78.1	268.1	404.8	637.5
Oak-hickory:						
Sawtimber	1,025.8	2.5	--	2.3	224.1	796.9
Poletimber	1,048.8	--	1.1	8.8	265.6	773.3
Sapling and seedling	590.3	--	.2	4.0	64.2	521.9
All stands	2,664.9	2.5	1.3	15.1	553.9	2,092.1
Elm-ash-cottonwood:						
Sawtimber	345.0	--	2.2	6.3	84.7	251.8
Poletimber	491.3	--	.7	15.6	51.9	423.1
Sapling and seedling	321.3	--	6.5	5.2	23.5	286.1
All stands	1,157.6	--	9.4	27.1	160.1	961.0
Maple-beech-birch:						
Sawtimber	1,254.8	--	2.4	70.3	453.4	728.7
Poletimber	1,599.9	1.0	7.4	149.7	590.4	851.4
Sapling and seedling	666.9	--	--	63.2	177.1	426.6
All stands	3,521.6	1.0	9.8	283.2	1,220.9	2,006.7
Aspen-birch:						
Sawtimber	161.2	--	3.5	52.2	81.6	23.9
Poletimber	2,307.1	--	6.6	446.1	1,325.0	529.4
Sapling and seedling	1,750.8	--	--	205.6	960.1	585.1
All stands	4,219.1	--	10.1	703.9	2,366.7	1,138.4
Nonstocked	369.7	--	2.3	1.5	69.7	296.2
All types:						
Sawtimber	3,098.4	6.0	60.4	210.8	934.3	1,886.9
Poletimber	6,579.5	4.5	43.0	830.6	2,630.3	3,071.1
Sapling and seedling	4,489.2	4.8	63.0	446.6	1,554.8	2,420.0
Nonstocked	369.7	--	2.3	1.5	69.7	296.2
All stands	14,536.8	15.3	168.7	1,489.5	5,189.1	7,674.2

Table 28. – Area of commercial forest land, by county and stand-size class, Wisconsin, 1968
(Thousand acres)

County	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
Adams	250.8	40.9	96.5	106.8	6.6
Ashland	526.6	57.6	296.7	159.0	13.3
Barron	152.9	26.8	86.2	35.9	4.0
Bayfield	777.3	64.1	422.6	266.4	24.2
Brown	36.9	18.1	10.3	7.7	.8
Buffalo	165.9	95.5	41.2	24.3	4.9
Burnett	317.3	36.8	175.2	100.2	5.1
Calumet	25.5	9.9	6.8	8.0	.8
Chippewa	211.4	35.1	92.7	75.2	8.4
Clark	276.8	46.4	114.3	106.0	10.1
Columbia	82.1	36.9	20.0	23.1	2.1
Crawford	130.8	67.5	39.0	20.6	3.7
Dane	74.3	36.9	18.1	17.1	2.2
Dodge	42.7	15.2	8.6	14.1	4.8
Door	96.2	31.5	37.6	24.2	2.9
Douglas	610.9	60.6	316.4	221.2	12.7
Dunn	139:0	71.7	36.3	25.6	5.4
Eau Claire	157.5	31.3	67.8	52.2	6.2
Florence	262.7	46.3	135.6	76.8	4.0
Fond du Lac	48.7	17.7	11.9	17.1	2.0
Forest	527.7	81.6	292.1	144.2	9.8
Grant	147.6	76.9	43.1	23.0	4.6
Green	31.3	17.8	6.7	5.9	.9
Green Lake	27.7	14.4	5.3	7.0	1.0
Iowa	120.8	51.9	35.9	27.4	5.6
Iron	373.9	60.0	205.1	102.6	6.2
Jackson	345.5	57.2	141.4	137.7	9.2
Jefferson	32.1	14.6	7.7	8.2	1.6
Juneau	239.6	51.5	94.2	87.2	6.7
Kenosha	9.9	4.8	2.2	2.6	.3
Kewaunee	30.9	12.4	8.8	9.6	.1
La Crosse	94.3	53.9	24.6	13.3	2.5
Lafayette	34.6	19.3	8.6	5.2	1.5
Langlade	382.2	63.3	187.4	127.3	4.2
Lincoln	399.1	59.6	193.2	142.0	4.3
Manitowoc	60.3	27.3	17.8	13.3	1.9
Marathon	373.8	90.3	145.8	127.6	10.1
Marinette	649.9	97.4	307.0	235.7	9.8
Marquette	99.9	23.8	30.8	40.5	4.8
Milwaukee	--	--	--	--	--

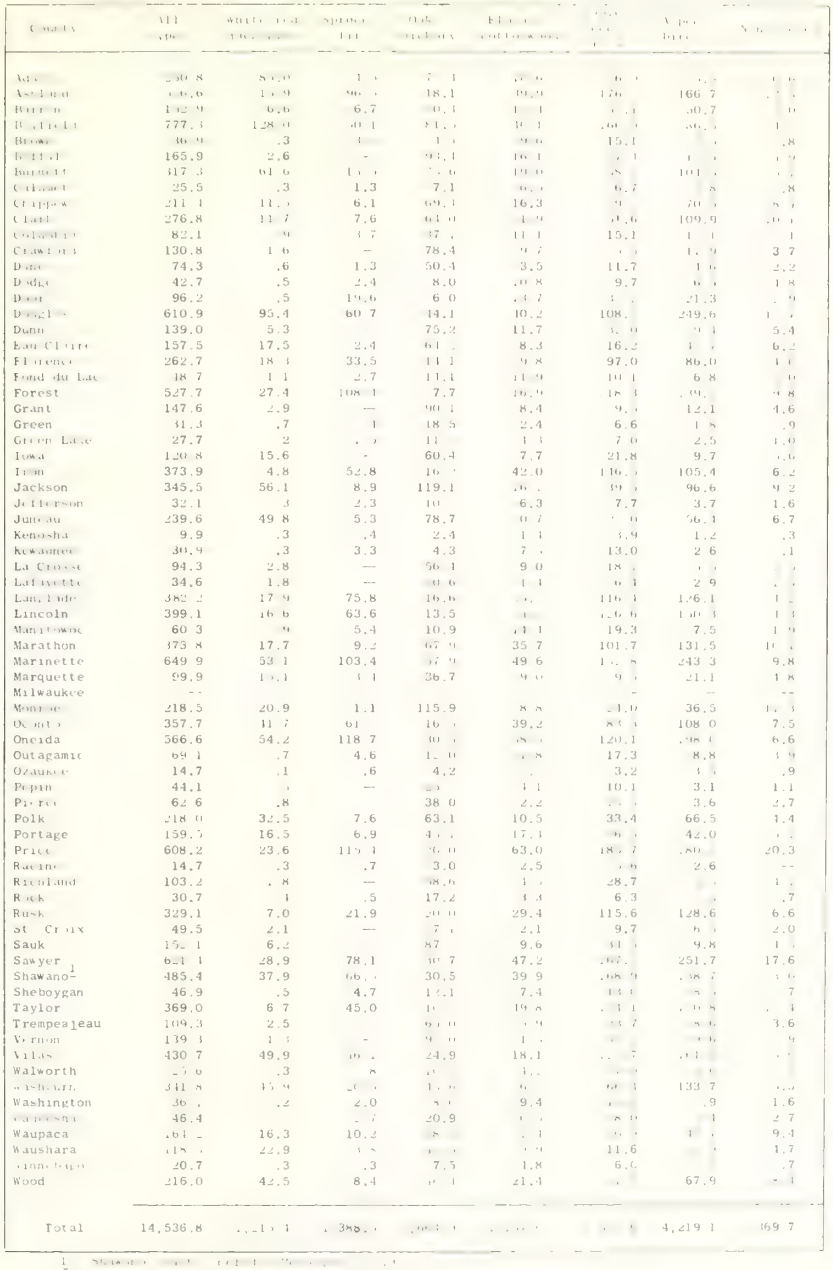
(Continued on next page)

Table 28 continued

County	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
Monroe	218.5	54.7	86.3	66.2	11.3
Oconto	357.7	73.3	173.8	103.1	7.5
Oneida	566.6	82.6	275.7	201.7	6.6
Outagamie	69.1	22.2	17.9	25.1	3.9
Ozaukee	14.7	4.6	4.5	4.7	.9
Pepin	44.1	25.7	11.6	5.7	1.1
Pierce	62.6	37.8	13.6	8.5	2.7
Polk	218.0	41.2	117.9	54.5	4.4
Portage	159.5	37.0	56.2	61.2	5.1
Price	608.2	107.0	296.2	184.7	20.3
Racine	14.7	7.2	2.9	4.6	--
Richland	103.2	55.4	26.6	17.1	4.1
Rock	30.7	15.2	5.5	9.3	.7
Rusk	329.1	42.7	182.6	97.2	6.6
St. Croix	49.5	24.4	15.6	7.5	2.0
Sauk	152.1	87.0	37.0	23.6	4.5
Sawyer	621.4	66.2	338.4	199.2	17.6
Shawano[1/]	485.4	142.1	222.4	117.9	3.0
Sheboygan	46.9	15.7	15.4	15.1	.7
Taylor	369.0	40.8	201.9	113.9	12.4
Trempealeau	109.3	58.0	28.6	19.1	3.6
Vernon	139.3	78.3	40.9	17.2	2.9
Vilas	430.7	75.3	222.9	127.5	5.0
Walworth	25.6	12.1	6.8	6.2	.5
Washburn	341.8	38.8	190.1	107.4	5.5
Washington	36.1	18.8	7.4	8.3	1.6
Waukesha	46.4	15.2	10.2	18.3	2.7
Waupaca	164.2	26.6	56.4	71.8	9.4
Waushara	118.3	28.1	39.5	46.0	4.7
Winnebago	20.7	10.7	4.5	4.8	.7
Wood	216.0	28.9	78.7	100.0	8.4
Total	14,536.8	3,098.4	6,579.5	4,489.2	369.7

1/ Shawano county includes Menominee county.

Table 29. – Area of commercial forest land, by county and forest type, Wisconsin, 1968
(Thousand acres)



County	All types	White-red-jack pine	Spruce-fir	Oak-hickory	Elm-ash-cottonwood	Aspen	Birch	Nonstocked
Ashland	380.8	87.0	1.0	7.1	5.6	6.0	4.3	6.6
Barron	166.6	14.9	9.3	18.1	19.0	120	166.7	2.1
Bayfield	192.9	6.6	6.7	20.1	1.1	1.1	20.7	1.0
Brown	777.3	128.0	40.1	91.3	30.1	46.9	86.3	1
Buffalo	86.9	.3	3	1.0	9.6	15.1	1	.8
Burnett	165.9	2.6	-	93.1	16.1	2.1	1	1.9
Calumet	317.3	61.6	1.0	7.6	19.0	85	101.3	1.1
Chippewa	25.5	.3	1.3	7.1	6.3	6.7	8	.8
Clark	211.1	11.3	6.1	69.1	16.3	9	70.3	8.7
Columbia	276.8	11.7	7.6	64.0	1.9	20.6	109.9	50.1
Crawford	82.1	.9	4.7	47.1	11.1	15.1	1.1	1
Dane	130.8	1.6	-	78.4	9.7	1.3	1.9	3.7
Dodge	74.3	.6	1.3	50.4	3.5	11.7	1.6	2.2
Door	42.7	.5	2.4	8.0	1.8	9.7	6.3	1.8
Douglas	96.2	.5	19.6	6.0	4.7	1.1	21.3	.9
Dunn	610.9	95.4	60.7	14.1	10.2	108.	249.6	1.7
Eau Claire	139.0	5.3	-	75.2	11.7	5.0	9.1	5.4
Florence	157.5	17.5	2.4	61.1	8.3	16.2	1.7	6.2
Fond du Lac	262.7	18.1	33.5	14.1	9.8	97.0	86.0	1.0
Forest	18.7	1.1	2.7	11.1	1.9	10.1	6.8	1.0
Grant	527.7	27.4	108.1	7.7	16.9	18.3	.99.	9.8
Green	147.6	2.9	—	90.1	8.4	9.3	12.1	4.6
Green Lake	41.3	.7	1	18.5	2.4	6.6	1.8	.9
Iowa	27.7	2	.3	11	1.3	7.0	2.5	1.0
Iron	120.8	15.6	-	60.4	7.7	21.8	9.7	.6
Jackson	373.9	4.8	52.8	16.7	42.0	136.1	105.4	6.2
Jefferson	345.5	56.1	8.9	119.1	26.1	89.3	96.6	9.2
Juneau	32.1	.3	2.3	10	6.3	7.7	3.7	1.6
Kenosha	239.6	49.8	5.3	78.7	0.7	7.0	56.1	6.7
Kewaunee	9.9	.3	.4	2.4	1.4	3.9	1.2	.3
La Crosse	30.9	.3	3.3	4.3	7.1	13.0	2.6	.1
Lafayette	94.3	2.8	—	56.1	9.0	18.1	1.3	.2
Langlade	34.6	1.8	—	0.6	1.1	0.3	2.9	.1
Lincoln	382.2	17.9	75.8	16.6	6.	116.1	146.1	1.3
Manitowoc	399.1	16.6	63.6	13.5	1	126.6	160.3	1.3
Marathon	60.3	9	5.4	10.9	4.1	19.3	7.5	1.9
Marinette	373.8	17.7	9.2	67.9	35.7	101.7	131.5	10.1
Marquette	649.9	53.1	103.4	57.9	49.6	1.8	243.3	9.8
Menominee	99.9	1.1	3.1	36.7	9.0	9.3	21.1	1.8
Milwaukee	--							--
Monroe	218.5	20.9	1.1	115.9	8.8	21.0	36.5	14.3
Oconto	357.7	11.7	61	16	39.2	83.1	108.0	7.5
Oneida	566.6	54.2	118.7	40.1	8.1	120.1	198.0	6.6
Outagamie	69.1	.7	4.6	1.0	1.8	17.3	8.8	1.9
Ozaukee	14.7	.1	.6	4.2	.	3.2	1.3	.9
Pepin	44.1	1	—	25	1.1	10.1	3.1	1.1
Pierce	62.6	.8		38.0	2.2	2.3	3.6	2.7
Polk	218.0	32.5	7.6	63.1	10.5	33.4	66.5	1.4
Portage	159.5	16.5	6.9	41.1	17.1	9.1	42.0	1.1
Price	608.2	23.6	115.1	76.0	63.0	185.7	180.	20.3
Racine	14.7	.3	.7	3.0	2.5	1.9	2.6	--
Richland	103.2	1.8	—	58.6	1.7	28.7	1	1.1
Rock	30.7	1	.5	17.2	1.4	6.3	1	.7
Rusk	329.1	7.0	21.9	20.0	29.4	115.6	128.6	6.6
St. Croix	49.5	2.1	—	7.1	2.1	9.7	6.3	2.0
Sauk	152.1	6.2		87	9.6	41.1	9.8	1.3
Sawyer	621.1	28.9	78.1	30.7	47.2	167.	251.7	17.6
Shawano-[1]	485.4	37.9	66.1	30.5	39.9	108.9	138.7	3.6
Sheboygan	46.9	.5	4.7	12.1	7.4	13.1	5.3	.7
Taylor	369.0	6.7	45.0	10	19.8	3.1	1.8	1.1
Trempealeau	109.3	2.5		91.0	1.9	13.7	1.6	3.6
Vernon	139.3	1.3	-	9.0	1.1	1	1.6	9
Vilas	430.7	49.9	60.1	24.9	18.1	1.7	1.1	1.1
Walworth	25.6	.3	.8	2.0	1.1	1.1	1	
Washburn	341.8	15.9	26.1	1.8	6.	66.3	133.7	1.0
Washington	36.1	.2	2.0	3.0	9.4	1	.9	1.6
Waukesha	46.4		2.7	20.9	1.1	8.9	1	2.7
Waupaca	161.2	16.3	10.2	.8	2.1	6.1	1.1	9.4
Waushara	118.1	22.9	1.5	1.1	1.9	11.6	1.1	1.7
Winnebago	20.7	.3	.3	7.5	1.8	6.6	1	.7
Wood	216.0	42.5	8.4	9.1	21.4	1	67.9	1.1
Total	14,536.8	1,210.1	1,388.1	1,903.1	1,1.1	4,219.1		869.7

[1] Shawano-Menominee counties.

Table 30. – Area of noncommercial forest land, by ownership class, Wisconsin, 1968
(Thousand acres)

Ownership class	All areas	Productive-reserved areas	Unproductive areas
National Forest	48.5	.6	47.9
Other public	155.0	33.6	121.4
Forest industry	31.9	--	31.9
Farmer and miscellaneous private	173.2	—	173.2
All ownerships	408.6	34.2	374.4

Table 31. Number of all live trees on commercial forest land, by species and diameter class, Wisconsin, 1968
(Thousand trees)

Species	All classes	Diameter class (inches at breast height)												
		1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0+
Softwoods:														
White pine	107,269	50,953	22,644	11,829	6,694	4,508	3,514	2,345	1,817	1,261	760	417	447	89
Red pine	147,843	53,565	53,692	24,241	8,748	2,639	1,605	1,545	837	541	214	87	29	--
Jack pine	381,021	160,221	105,898	70,949	30,824	9,634	2,631	727	115	18	3	--	--	--
White spruce	53,573	24,435	14,568	7,565	3,982	1,778	675	353	160	37	12	6	2	--
Black spruce	203,992	111,242	64,897	22,321	4,533	879	74	33	7	5	--	--	--	1
Balsam fir	638,684	360,606	161,661	78,902	27,855	7,556	1,697	329	69	9	--	--	--	--
Hemlock	61,643	20,452	10,589	7,268	7,153	5,727	4,013	2,582	1,774	1,058	486	272	254	15
Tamarack	124,514	56,445	40,345	19,405	6,088	1,468	598	110	47	4	4	--	--	--
Northern white-cedar	282,538	113,999	78,178	48,219	23,524	12,100	4,151	1,578	558	137	60	22	12	--
Other softwoods	4,098	1,657	1,906	249	131	124	17	14	--	--	--	--	--	--
Total softwoods	2,005,175	953,575	554,378	290,939	119,532	46,413	18,976	9,616	5,484	3,070	1,539	804	744	105
Hardwoods:														
White oak	209,972	78,491	48,582	30,778	18,693	12,793	8,838	5,269	3,097	1,678	771	423	463	96
Select red oak	244,141	70,604	50,521	44,190	30,116	19,024	11,046	7,630	4,787	2,752	1,711	859	787	114
Other red oak	268,664	87,281	70,230	48,857	27,424	15,007	9,047	5,005	2,774	1,447	811	377	353	51
Hickory	85,375	47,783	17,749	10,188	4,760	2,907	1,232	542	179	24	11	--	--	--
Yellow birch	132,338	61,969	29,426	17,185	9,985	5,242	3,564	2,101	1,217	760	404	185	256	44
Hard maple	1,215,122	801,979	236,873	94,481	38,193	18,704	9,958	6,172	3,857	2,200	1,316	640	680	69
Soft maple	1,044,271	648,689	246,044	86,596	33,973	15,083	6,746	3,439	1,724	926	513	215	230	93
Beech	17,678	13,195	1,544	890	418	393	405	277	223	158	92	41	42	--
Ash	414,323	225,278	94,506	50,260	24,593	10,942	5,078	2,255	854	287	122	91	51	6
Balsam poplar	14,388	8,227	1,760	1,890	992	683	384	253	93	53	29	21	3	--
Cottonwood	1,884	224	516	234	298	205	150	45	75	35	30	18	31	23
Paper birch	557,833	224,037	161,797	109,338	43,500	13,625	3,996	1,019	306	111	45	36	16	7
Bigtooth aspen	226,112	92,888	47,793	38,325	26,035	12,550	5,228	2,031	885	275	58	36	8	--
Quaking aspen	1,255,443	643,357	278,122	173,571	96,345	43,479	14,643	4,334	1,173	351	59	3	6	--
Basswood	253,868	97,946	62,798	44,572	24,641	12,550	5,499	2,759	1,548	768	348	203	195	41
Butternut	9,354	3,496	1,799	1,076	763	1,075	636	310	96	72	15	12	4	--
Black walnut	2,389	803	327	288	367	245	165	92	58	26	9	7	2	--
Black cherry	132,897	80,454	28,763	13,619	6,451	2,121	935	265	188	59	4	18	10	--
Elm	301,102	151,509	58,863	35,117	22,852	12,573	8,039	5,352	2,961	1,615	924	542	590	165
Other hardwoods	25,591	15,739	4,195	2,355	1,379	640	630	247	198	92	48	29	34	5
Noncommercial species	521,943	453,555	55,127	9,663	2,414	960	198	9	13	4	--	--	--	--
Total hardwoods	6,934,688	3,807,504	1,497,335	813,473	414,192	200,801	96,417	49,406	26,306	13,703	7,320	3,756	3,761	714
All Species	8,939,863	4,761,079	2,051,713	1,104,412	533,724	247,214	115,393	59,022	31,790	16,773	8,859	4,560	4,505	819

Table 32. — Number of growing-stock trees on commercial forest land, by species and diameter class, Wisconsin, 1968
(Thousand trees)

Species	All classes	1.0–2.9	3.0–4.9	5.0–6.9	7.0–8.9	9.0–10.9	11.0–12.9	13.0–14.9	15.0–16.9	17.0–18.9	19.0–20.9	21.0–22.9	23.0–24.9	25.0+
Softwoods:														
White pine	75,892	28,424	15,736	9,210	5,965	3,956	2,572	1,867	1,284	1,144	724	554	337	93
Red pine	141,479	70,042	32,159	13,021	5,694	2,578	1,434	921	551	334	183	57	39	11
Jack pine	310,899	148,767	78,912	43,317	27,982	7,951	1,937	1,021	258	111	44	10	9	1
White spruce	50,901	22,337	14,530	7,433	3,997	1,571	691	194	97	14	9	3	1	--
Black spruce	150,550	69,976	36,907	21,226	14,171	5,477	1,774	1,023	274	97	39	10	4	1
Balsam fir	392,892	320,750	1 53,972	7 ,273	2 ,790	7,983	2,988	1,044	258	84	28	8	3	--
Hemlock	98,418	14,151	8,844	6,023	4,654	4,711	3,429	2,993	1,963	930	448	249	240	135
Tamarack	111,442	50,253	37,556	18,494	5,179	1,321	474	166	40	9	4	--	--	--
Northern white-cedar	133,[illegible]	90,[illegible]	28,[illegible]	10,[illegible]	1,[illegible]	1,377	1,[illegible]	1,[illegible]	361	89	44	17	8	--
Other softwoods	3,242	1,478	1,176	131	47	11	7	--	--	--	--	--	--	--
Total softwood	1,[illegible],144	8[illegible],731	[illegible],[illegible]	2[illegible],782	1[illegible],677	39,[illegible]	1[illegible],[illegible]	8,[illegible]07	4,857	[illegible],[illegible]07	1,[illegible]	741	[illegible]56	[illegible]48
Hardwoods:														
White oak	107,241	37,454	28,174	19,[illegible]	11,[illegible]	7,814	[illegible],[illegible]	2,859	1,835	77[illegible]	[illegible]94	15[illegible]	144	19
Select red oak	109,[illegible]	34,761	34,684	30,[illegible]	24,[illegible]3	15,[illegible]7	8,[illegible]70	[illegible],[illegible]74	3,887	1,[illegible]80	1,2[illegible]6	55[illegible]	464	54
Other red oak	107,[illegible]04	34,[illegible]26	30,[illegible]73	25,[illegible]34	13,[illegible]97	7,[illegible]03	[illegible],143	2,384	1,175	[illegible]42	[illegible]43	1[illegible]	131	13
Hickory	[illegible],737	26,[illegible]93	13,931	8,050	3,[illegible]29	2,167	[illegible]45	365	135	15	7	--	--	--
Yellow birch	80,[illegible]60	34,[illegible]28	18,491	11,[illegible]45	[illegible],[illegible]31	3,[illegible]95	2,[illegible]65	1,142	873	[illegible]32	227	138	101	21
Hard maple	804,[illegible]62	[illegible]24,[illegible]08	191,709	77,328	29,[illegible]79	14,040	6,[illegible]11	4,[illegible]99	2,804	1,[illegible]73	[illegible]06	[illegible]04	[illegible]03	29
Soft maple	699,[illegible]34	2[illegible],[illegible]47	185,[illegible]97	9[illegible],[illegible]93	34,[illegible]67	10,611	4,[illegible]79	2,317	1,024	[illegible]29	[illegible]23	115	116	21
Beech	11,[illegible]65	[illegible],872	1,[illegible]86	[illegible]29	182	[illegible]07	[illegible]33	130	131	[illegible]93	[illegible]37	[illegible]5	[illegible]9	--
Ash	[illegible],[illegible]91	1[illegible],[illegible]26	73,[illegible]03	[illegible]3,[illegible]	21,[illegible]19	[illegible],[illegible]31	4,[illegible]25	1,873	721	[illegible]21	[illegible]89	[illegible]1	33	[illegible]
Balsam poplar	1[illegible],[illegible]04	7,033	1,[illegible]63	1,[illegible]46	[illegible]35	[illegible]53	[illegible]78	[illegible]29	[illegible]5	[illegible]1	[illegible]0	21	[illegible]	--
Cottonwood	1,188	--	[illegible]05	[illegible]57	[illegible]98	[illegible]06	[illegible]07	[illegible]58	[illegible]4	[illegible]5	[illegible]8	[illegible]3	[illegible]2	[illegible]0
Paper birch	[illegible]3,[illegible]38	[illegible]60,[illegible]37	137,389	97,840	[illegible]6,[illegible]90	11,841	[illegible],[illegible]51	[illegible]29	[illegible]05	[illegible]1	[illegible]0	[illegible]0	[illegible]	--
Black/bigtooth aspen	[illegible]67,[illegible]09	[illegible]7,[illegible]12	[illegible]5,[illegible]34	[illegible]5,[illegible]26	24,[illegible]95	[illegible]1,[illegible]60	[illegible],[illegible]87	1,[illegible]69	[illegible]14	177	[illegible]1	[illegible]6	[illegible]	--
Quaking aspen	[illegible]92,[illegible]11	481,[illegible]17	[illegible]22,[illegible]72	151,[illegible]30	[illegible]3,[illegible]83	37,[illegible]80	11,[illegible]63	3,[illegible]59	[illegible]66	[illegible]41	[illegible]3	[illegible]	[illegible]	--
Basswood	178,[illegible]41	47,[illegible]19	[illegible]6,[illegible]40	[illegible]9,[illegible]67	[illegible]5,[illegible]19	11,[illegible]17	[illegible],[illegible]02	2,[illegible]45	1,[illegible]03	[illegible]84	[illegible]36	140	[illegible]9	[illegible]
Butternut	[illegible],[illegible]08	[illegible]84	[illegible]90	[illegible]36	[illegible]92	[illegible]85	[illegible]57	[illegible]45	[illegible]3	[illegible]1	[illegible]6	[illegible]3	--	--
Black walnut	1,[illegible]67	[illegible]20	[illegible]67	[illegible]5	[illegible]71	[illegible]09	[illegible]3	[illegible]1	[illegible]3	[illegible]1	[illegible]4	[illegible]3	--	--
Black cherry	[illegible]0,[illegible]89	[illegible],[illegible]53	12,741	[illegible],[illegible]74	[illegible],[illegible]14	1,[illegible]86	[illegible]88	[illegible]7[illegible]	[illegible]6	[illegible]7	--	[illegible]	[illegible]5	--
Elm	[illegible]6[illegible],[illegible]2[illegible]	[illegible]2,[illegible]14	[illegible]9,[illegible]34	[illegible]7,[illegible]40[illegible]	[illegible]6,[illegible]07	[illegible]6,[illegible]36[illegible]	[illegible],[illegible]48	[illegible],[illegible]64	2,[illegible]81	1,[illegible]66	[illegible]14	[illegible]7[illegible]	[illegible]63	[illegible]4
Other hardwoods	[illegible],[illegible]3[illegible]	[illegible],[illegible]97	[illegible]31	[illegible]18	[illegible]57	[illegible]65	[illegible]2[illegible]	[illegible]9[illegible]	[illegible]05	[illegible]3	[illegible]1	[illegible]1	[illegible]1	--
Noncommercial species	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total hardwood	[illegible],[illegible]49,[illegible]13[illegible]	[illegible],[illegible]05,[illegible]03	1,[illegible]81,[illegible]13	[illegible]48,[illegible]76[illegible]	[illegible]30,[illegible]32[illegible]	[illegible]5[illegible],[illegible]71[illegible]	[illegible]3,[illegible]72[illegible]	34,[illegible]27[illegible]	17,[illegible]88[illegible]	[illegible],[illegible]9[illegible]	[illegible],[illegible]59	[illegible],[illegible]14[illegible]	[illegible],[illegible]28	[illegible]94
All Species	[illegible],[illegible]92,[illegible]92	[illegible],[illegible]87,394	1,[illegible]62,[illegible]75	[illegible]91,[illegible]44[illegible]	[illegible]57,[illegible]1[illegible]	[illegible]9[illegible],[illegible]0[illegible]	[illegible]4,[illegible]52[illegible]	42,658	22,[illegible]73	11,[illegible]17	[illegible],[illegible]24	[illegible],[illegible]33	2,[illegible]6[illegible]	[illegible]62

Table 33. Number of growing-stock trees on commercial forest land, by species group, diameter class, and Forest Survey Unit, Wisconsin, 1968
(Thousand trees)

ALL UNITS

Species group	All classes	Diameter class (inches at breast height) 1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0+
Softwoods	1,772,149	821,731	501,962	266,782	106,877	39,549	16,252	8,407	4,887	2,767	1,440	741	656	98
Hardwoods	4,420,133	2,065,663	1,081,013	648,762	330,252	155,971	68,572	34,251	17,886	8,790	4,589	2,192	1,928	264
All species	6,192,282	2,887,394	1,582,975	915,544	437,129	195,520	84,824	42,658	22,773	11,557	6,029	2,933	2,584	362
NORTHWESTERN UNIT														
Softwoods	633,573	289,633	169,124	102,141	44,533	16,205	5,755	3,030	1,582	861	361	198	139	11
Hardwoods	1,757,284	808,752	441,403	271,480	137,043	59,447	23,176	9,649	3,718	1,489	643	263	197	24
All species	2,390,857	1,098,385	610,527	373,621	181,576	75,652	28,931	12,679	5,300	2,350	1,004	461	336	35
NORTHEASTERN UNIT														
Softwoods	775,207	358,730	226,780	112,962	42,696	16,573	7,661	3,979	2,530	1,508	825	458	431	74
Hardwoods	1,456,306	719,927	352,723	204,511	100,615	44,859	16,894	8,020	3,932	2,408	1,252	564	541	60
All species	2,231,513	1,078,657	579,503	317,473	143,311	61,432	24,555	11,999	6,462	3,916	2,077	1,022	972	134
CENTRAL UNIT														
Softwoods	263,616	123,478	77,292	38,334	14,668	5,153	2,183	1,138	659	359	211	61	69	11
Hardwoods	731,357	337,168	185,044	108,754	51,895	25,339	11,751	5,796	3,158	1,240	633	322	236	21
All species	994,973	460,646	262,336	147,088	66,563	30,492	13,934	6,934	3,817	1,599	844	383	305	32
SOUTHWESTERN UNIT														
Softwoods	27,680	13,788	9,339	3,309	850	109	125	31	36	27	28	19	17	2
Hardwoods	274,984	100,146	59,369	41,404	27,079	18,070	11,764	7,482	4,752	2,304	1,362	621	544	87
All species	302,664	113,934	68,708	44,713	27,929	18,179	11,889	7,513	4,788	2,331	1,390	640	561	89
SOUTHEASTERN UNIT														
Softwoods	72,073	36,102	19,427	10,036	4,130	1,509	528	229	80	12	15	5	--	--
Hardwoods	200,202	99,670	42,474	22,613	13,620	8,256	4,987	3,304	2,326	1,349	699	422	410	72
All species	272,275	135,772	61,901	32,649	17,750	9,765	5,515	3,533	2,406	1,361	714	427	410	72

Table 34. – Number of short-log trees on commercial forest land, by species and diameter class, Wisconsin, 1968
(Thousand trees)

	All	9.0-10.9		13.0-	15.0-		19.0-	21.0-22.9		29.0+
						47		6	10	
			13							
		182								
	1,077	1,059	653	173		74	6	9	12	4
			1,[illegible]		527		191			
				474						
	3,313		1,368			336	11			
					11					
					71		4	3	16	
			1,029			144				
					242		37			
									6	
				112						
				17						
Cottonwood								2	7	
					17					
			141	89						
	792	1			31					
		15			105				24	
Butternut	14			49						
						11				
		16								
Elm	1,[illegible]						74			22
		12		14	11		3		2	
					2,697			421		
All species	21,576	1,314	9,072				782			

Table 35. – Percentage of sawtimber trees on commercial forest land, by butt-log grade and species, Wisconsin, 1968

(In percent)

Species	Grade 1	Grade 2	Grade 3	Grade 4
[illegible]				
[illegible]	5	14	58	22
[illegible]		17	78	5
[illegible]		1	98	1
[illegible]	--	--	100	--
[illegible]	--	--	98	1
[illegible]	4	17	78	1
Tamarack	--	1	99	--
[illegible]	--	4	94	2
[illegible]	--	--	100	--
[illegible]	--	8	92	5
[illegible]				
[illegible]		34	3	6
[illegible]	11	24	54	11
[illegible]	4	14	82	14
[illegible]	3	17	77	3
[illegible]	10	23	67	
[illegible]	2	26	47	5
Soft maple	5	22	69	4
[illegible]	3	3	44	11
[illegible]	1	40	44	1
[illegible]	1	21	55	3
[illegible]	4	14	49	17
[illegible]	1	2	71	5
[illegible]	1	30	64	2
[illegible]		3	78	6
[illegible]	15	40	43	2
[illegible]	1	40	43	15
[illegible]	1	13	74	
[illegible]	4	39	57	--
[illegible]	1	20	75	3
[illegible]	9	18	63	10
[illegible]		--	--	--
[illegible]	10	32	53	5
[illegible]	3	1	93	3

Table 36. – Net volume of timber on commercial forest land, by class of timber and softwoods and hardwoods, Wisconsin, 1968

(Million cubic feet)

Class of timber	All species	Softwoods	Hardwoods
Sawtimber trees:			
Saw-log portion	3,631.4	1,039.1	2,592.3
Upper-stem portion	810.9	219.1	591.8
Total sawtimber	4,442.3	1,258.2	3,184.1
Poletimber trees	6,553.8	1,216.5	5,337.3
Total growing stock	10,996.1	2,474.7	8,521.4
Rough cull trees:			
Sawtimber	149.6	16.1	133.5
Poletimber	289.5	24.4	265.1
Total rough cull	439.1	40.5	398.6
Short-log cull trees:			
Sawtimber	383.9	19.9	364.0
Poletimber	--	--	--
Total short-log	383.9	19.9	364.0
Rotten cull trees:			
Sawtimber	163.1	18.4	144.7
Poletimber	97.7	6.3	91.4
Total rotten cull	260.8	24.7	236.1
Total cull	1,083.8	85.1	998.7
Salvable dead trees:			
Sawtimber	24.9	7.4	17.5
Poletimber	28.7	5.9	22.8
Total salvable dead	53.6	13.3	40.3
All classes	12,133.5	2,573.1	9,560.4

Table 37. – Net volume of growing stock and sawtimber on commercial forest land, by ownership class and softwoods and hardwoods, Wisconsin, 1968

Ownership class	Growing stock			Sawtimber		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Million cubic feet			Million board feet 1/		
National Forest	1,095.0	352.2	742.8	1,575.2	772.6	802.6
Other public	2,192.4	581.2	1,611.2	3,374.5	1,396.5	1,978.0
Forest industry	1,256.6	436.8	819.8	3,077.6	1,402.6	1,675.0
Farmer and miscellaneous private	6,452.1	1,104.5	5,347.6	13,728.4	2,925.4	10,803.0
All ownerships	10,966.1	2,474.7	8,521.4	21,755.7	6,497.1	15,258.6

1/ International 1/4-inch rule.

Table 38. – Net volume of growing stock on commercial forest land, by species and diameter class, Wisconsin, 1968
(Million cubic feet)

Species	All classes	Diameter classes (inches at breast height)											
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0+
Softwoods:												
White pine	412.7	24.4	26.9	36.4	45.5	47.0	52.7	49.4	38.9	29.9	42.8	18.8
Red pine	241.1	47.6	38.8	23.5	24.6	34.4	30.2	22.6	11.5	5.4	2.5	--
Jack pine	417.6	161.5	141.1	70.9	31.0	10.5	2.0	.6	--	--	—	—
White spruce	81.7	17.1	21.2	17.0	10.0	7.8	4.3	1.9	.8	.4	.2	—
Black spruce	92.0	57.9	23.1	8.6	1.2	.6	.3	.3	—	--	—	—
Balsam fir	439.0	200.0	139.5	65.8	25.1	6.4	2.2	--	--	--	--	--
Hemlock	336.2	14.9	28.3	38.9	47.0	47.9	46.6	38.8	26.2	18.9	25.5	4.2
Tamarack	111.1	54.0	33.0	13.7	7.4	1.5	1.3	--	.2	--	--	—
Northern white-cedar	342.4	98.2	88.3	79.2	38.0	21.8	9.0	3.3	2.2	1.1	.7	—
Other softwoods	.9	.4	.3	.1	.1	--	--	--	--	--	—	—
Total softwoods	2,474.7	676.0	540.5	354.1	229.9	177.9	150.2	116.9	79.8	55.7	71.7	22.0
Hardwoods:												
White oak	406.1	47.7	57.6	69.0	70.2	57.1	44.6	27.6	13.5	7.5	10.0	1.9
Select red oak	992.8	112.7	142.8	146.1	128.1	131.5	112.5	78.8	60.9	33.2	38.6	7.6
Other red oak	367.6	61.7	65.6	59.7	53.7	44.5	29.3	19.8	14.6	7.9	9.1	1.7
Hickory	107.4	32.6	25.4	25.1	13.0	7.3	3.4	.3	.3	—	—	—
Yellow birch	219.6	29.5	33.8	26.8	30.4	23.5	25.3	19.5	11.2	8.3	8.3	3.0
Hard maple	938.4	207.7	160.9	127.0	93.8	89.4	66.0	62.9	47.4	27.1	37.1	4.5
Soft maple	646.7	195.0	140.3	101.8	68.2	51.2	31.4	21.6	16.3	7.4	10.3	1.2
Beech	25.8	2.9	1.2	2.2	3.7	3.0	4.0	1.6	1.9	1.6	1.7	--
Ash	505.6	138.9	124.5	91.8	65.4	41.1	22.1	9.1	4.9	4.1	3.2	.5
Balsam poplar	32.6	5.9	5.1	6.2	4.0	4.6	2.0	1.8	1.2	1.4	.4	—
Cottonwood	19.5	.6	1.3	2.0	1.6	.9	2.0	1.4	1.5	.8	2.7	4.7
Paper birch	727.5	300.0	232.8	118.0	49.4	16.2	5.9	2.7	1.3	.9	.3	—
Bigtooth aspen	519.2	102.1	148.6	121.3	78.9	39.7	19.3	6.8	1.5	1.0	.2	—
Quaking aspen	1,640.3	458.7	510.9	384.0	186.6	70.9	22.7	5.1	1.4	—	—	—
Basswood	559.6	107.3	129.3	109.9	75.2	50.5	36.7	22.0	11.1	5.1	3.3	.6
Butternut	18.3	2.5	1.4	5.2	3.7	3.1	1.1	.7	.4	.2	—	—
Black walnut	7.5	.2	1.4	1.0	1.2	1.3	1.5	.5	.2	.2	—	—
Black cherry	69.6	21.3	21.3	11.4	6.8	3.4	2.8	1.9	—	.3	.4	—
Elm	695.4	87.6	103.8	97.9	94.3	85.6	66.0	48.2	36.8	24.8	35.9	14.5
Other hardwoods	21.9	2.5	3.1	2.4	3.9	2.1	3.0	2.3	1.1	.7	.8	—
Noncommercial species	--	--	--	--	--	--	--	--	--	--	--	--
Total hardwoods	8,521.4	1,917.4	1,911.1	1,508.8	1,032.1	726.9	516.2	335.8	227.5	136.1	167.3	42.2
All species	10,996.1	2,593.4	2,451.6	1,862.9	1,262.0	904.8	666.4	452.7	307.3	191.8	239.0	64.2

Table 39. – Net volume of sawtimber on commercial forest land, by species and diameter class, Wisconsin, 1968
(Million board feet)[1]

Species	All classes	Diameter class (inches at breast height)								
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0+
Softwoods:										
White pine	1,944.6	194.8	238.3	250.3	276.8	264.6	205.1	162.0	240.2	112.5
Red pine	843.9	127.4	131.9	182.9	164.3	123.4	66.0	32.5	15.5	--
Jack pine	561.3	345.8	151.9	51.0	9.8	2.8	--	--	--	--
White spruce	203.9	79.9	46.1	36.7	24.1	9.2	4.5	2.2	1.2	--
Black spruce	50.5	39.5	5.4	3.2	1.2	1.2	--	--	--	--
Balsam fir	460.6	308.2	112.9	29.1	10.4	--	--	--	--	--
Hemlock	1,583.8	206.8	243.9	251.7	250.1	209.4	144.5	106.5	150.1	20.8
Tamarack	117.1	66.7	35.8	7.6	6.4	--	.6	--	--	--
Northern white-cedar	730.4	372.9	181.5	97.0	45.3	15.8	10.4	4.6	2.9	--
Other softwoods	1.0	.5	.5	--	--	--	--	--	--	--
Total softwoods	6,497.1	1,742.5	1,148.2	909.5	788.4	626.4	431.1	307.8	409.9	133.3
Hardwoods:										
White oak	1,091.8	-	375.0	269.6	198.0	115.3	54.3	30.6	40.6	8.4
Select red oak	2,889.2	-	689.8	666.2	545.7	368.2	272.6	147.5	165.8	33.4
Other red oak	825.0	-	272.6	205.1	127.0	82.9	62.1	33.1	35.6	6.6
Hickory	107.3	--	57.2	31.0	16.0	2.0	1.1	--	--	--
Yellow birch	642.0	-	159.9	114.6	122.0	90.6	55.2	42.0	42.3	15.4
Hard maple	2,119.4	--	458.5	426.1	372.6	296.8	230.5	131.0	180.4	23.5
Soft maple	980.2	-	336.5	239.4	144.5	99.3	69.6	32.0	43.2	15.7
Beech	87.0	--	16.1	13.6	18.7	16.9	8.2	6.3	7.2	--
Ash	765.7	-	339.7	213.9	109.5	45.2	22.7	17.5	13.8	3.4
Balsam poplar	80.6	—	23.3	25.8	10.6	9.1	5.4	5.4	1.0	--
Cottonwood	65.8	--	7.7	4.8	9.8	6.6	6.5	3.1	11.4	15.9
Paper birch	376.4	--	237.2	80.5	29.3	14.3	6.6	6.1	2.4	--
Bigtooth aspen	740.8	--	379.9	202.8	105.4	39.3	8.8	4.2	.4	--
Quaking aspen	1,368.5	--	869.2	342.2	118.4	30.4	8.3	--	--	--
Basswood	1,005.8	--	363.0	240.2	172.4	100.8	48.4	38.9	39.0	3.1
Butternut	43.9	--	18.4	14.9	4.8	3.6	1.5	.7	--	--
Black walnut	22.5	-	5.9	6.7	6.8	1.8	1.0	.3	--	—
Black cherry	72.0	-	32.8	14.6	13.4	8.5	--	1.2	1.5	--
Elm	1,906.6	--	455.3	408.3	316.8	229.5	169.4	112.9	159.6	54.8
Other hardwoods	68.1	--	19.2	10.5	14.8	10.2	5.8	3.2	4.4	--
Noncommercial species	--	-	--	—	--	--	--	--	--	--
Total hardwoods	15,258.6	--	5,117.2	3,530.8	2,456.5	1,571.3	1,038.0	616.0	748.6	180.2
All Species	21,755.7	1,742.5	6,265.4	4,440.3	3,244.9	2,197.7	1,469.1	923.8	1,158.5	313.5

1/ International 1/4-inch rule.

Table 40. – Net volume of growing stock on commercial forest land, by species and Forest Survey Unit, Wisconsin, 1968
(Million cubic feet)

Species	All units	Northeastern unit	Northwestern unit	Central unit	Southeastern unit	Southwestern unit
Softwoods:						
White pine	412.7	200.0	107.3	92.2	4.4	8.8
Red pine	241.1	118.6	80.0	32.8	2.3	7.4
Jack pine	417.6	101.1	188.2	122.5	.8	5.0
White spruce	81.7	46.8	33.4	.6	.9	--
Black spruce	92.0	62.5	27.9	1.5	.1	--
Balsam fir	439.0	204.5	223.6	9.2	1.7	--
Hemlock	336.2	229.4	77.9	24.7	4.2	--
Tamarack	111.1	25.5	63.9	14.7	6.9	.1
Northern white-cedar	342.4	159.8	108.9	22.0	51.7	--
Other softwoods	.9	--	--	.6	.1	.2
Total softwoods	2,474.7	1,148.2	911.1	320.8	73.1	21.5
Hardwoods:						
White oak	406.1	10.9	51.5	106.3	75.9	161.5
Select red oak	992.8	143.3	227.5	238.7	75.3	308.0
Other red oak	367.6	40.5	39.1	131.8	34.0	122.2
Hickory	107.4	4.6	2.5	8.6	28.1	63.6
Yellow birch	219.6	97.1	94.8	22.7	4.0	1.0
Hard maple	938.4	374.3	376.7	75.3	46.7	65.4
Soft maple	646.7	165.6	241.0	139.8	34.5	65.8
Beech	25.8	13.1	-	.5	12.2	--
Ash	505.6	127.0	220.5	61.6	64.7	31.8
Balsam poplar	32.6	21.7	6.4	.1	4.1	.3
Cottonwood	14.5	4.4	.1	--	5.2	9.8
Paper birch	727.5	272.8	326.8	66.5	17.5	43.9
Bigtooth aspen	519.2	148.6	198.9	88.3	13.4	70.0
Quaking aspen	1,640.3	536.7	780.6	215.7	41.2	66.1
Basswood	559.6	185.2	241.3	50.9	20.0	62.2
Butternut	18.3	3.5	3.1	2.8	1.0	7.9
Black walnut	7.5	—		.2	2.4	4.9
Black cherry	69.6	21.0	11.7	7.6	16.2	13.1
Elm	695.4	212.0	164.2	101.1	105.6	112.5
Other hardwoods	21.9	2.3	.3	3.0	7.7	8.6
Noncommercial species	--	--	--	--	-	--
Total hardwoods	8,521.4	2,384.6	2,987.0	1,321.5	609.7	1,218.6
All Species	10,996.1	3,532.8	3,898.1	1,642.3	682.8	1,240.1

Table 41. – Net volume of sawtimber on commercial forest land, by species and Forest Survey Unit, Wisconsin, 1968
(Million board feet)[1]

	All	Northeastern unit	[illegible]	Central unit	Southeastern unit	[illegible]
[illegible]	[illegible]	[illegible]	532.3	417.0	17.0	[illegible]
[illegible]	[illegible]	469.6	[illegible]	105.1	1.8	[illegible]
[illegible]	[illegible]	184.6	205.0	161.4	3.3	[illegible]
[illegible]	[illegible]	100.5	[illegible]	1.6	.9	[illegible]
[illegible]	50.5	35.3	13.7	1.5	[illegible]	[illegible]
[illegible]	460.6	183.4	270.0	4.6	[illegible]	[illegible]
[illegible]	1,583.8	1,109.4	379.6	82.3	12.5	[illegible]
Tamarack	117.1	23.1	71.9	12.8	[illegible]	[illegible]
[illegible]	[illegible]	299.8	322.4	[illegible]	[illegible]	[illegible]
[illegible]	1.0	[illegible]	--	1.0	[illegible]	[illegible]
[illegible]	6,497.1	3,354.9	2,157.4	810.8	132.1	[illegible]
[illegible]	1,091.8	[illegible]	82.6	255.6	[illegible]	[illegible]
[illegible]	2,889.2	318.5	[illegible]	699.2	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	65.5	[illegible]	107.7	[illegible]
[illegible]	107.3	7.6	2.2	11.6	35.6	[illegible]
[illegible]	642.0	329.5	263.2	40.5	6.2	2.6
[illegible]	2,119.4	1,040.1	[illegible]	203.1	125.2	[illegible]
[illegible]	980.2	228.2	278.7	[illegible]	83.0	167.2
[illegible]	87.0	48.1	[illegible]	1.7	[illegible]	[illegible]
[illegible]	765.7	[illegible]	[illegible]	93.7	[illegible]	[illegible]
[illegible]	80.6	52.6	[illegible]	[illegible]	12.7	[illegible]
[illegible]	65.8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	143.3	[illegible]	23.7	24.3	54.9
[illegible]th aspen	740.8	166.7	[illegible]	96.8	24.2	182.7
[illegible]	1,368.5	418.3	756.5	[illegible]	[illegible]	52.1
[illegible]	1,005.8	281.6	[illegible]	127.3	62.3	[illegible]
[illegible]	[illegible]	9.4	[illegible]	8.2	1.4	18.3
[illegible]	[illegible]	[illegible]	[illegible]	1.0	8.4	13.1
Black cherry	72.0	15.9	.8	5.5	35.8	14.0
Elm	1,906.6	579.2	412.5	299.1	327.4	288.4
[illegible]	68.1	9.0	.7	12.8	22.3	23.3
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	15,258.6	3,946.8	3,865.7	2,438.3	,629.0	3,378.8
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	21,755.7	[illegible]	6,023.1	3,249.1	1,761.1	3,420.7

Table 42. Net volume of growing stock on commercial forest land, by species and forest type, Wisconsin, 1968
(Million cubic feet)

Species	All forest types	Forest types												
		Jack pine	Red pine	White pine	Balsam fir-white spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-cottonwood	Maple-beech-birch	Aspen	Paper birch	Nonstocked
Softwoods:														
White pine	412.7	6.9	22.8	148.5	13.4	3.8	2.9	5.2	35.2	18.6	103.3	43.5	8.5	0.1
Red pine	241.1	14.9	121.9	19.8	4.1	4.1	.2	.7	16.3	1.0	13.2	37.8	7.1	--
Jack pine	417.6	306.8	9.9	4.3	.3	.7	--	.2	46.3	1.3	1.2	43.1	3.3	.2
White spruce	81.7	--	1.2	2.6	34.2	1.0	2.8	1.0	--	7.6	11.1	17.5	2.4	.3
Black spruce	92.0	1.9	1.2	1.8	17.6	36.9	9.9	10.1	--	2.3	1.7	7.8	.8	--
Balsam fir	439.0	.2	3.1	5.5	190.3	8.8	32.6	6.1	--	33.0	77.5	64.6	17.2	.1
Hemlock	336.2	--	.5	2.1	11.1	1.1	8.8	.2	.3	16.5	291.1	2.2	2.3	--
Tamarack	111.1	--	.4	1.3	5.0	8.2	8.7	60.1	1.2	8.2	2.1	13.7	1.8	.4
Northern white-cedar	342.4	--	.3	3.0	36.2	1.0	179.4	2.1	--	52.2	54.0	10.5	3.7	--
Other softwoods	.9	.2	.4	--	--	--	--	--	--	--	.2	.1	--	--
Total softwoods	2,474.7	330.9	161.7	188.9	312.2	65.6	245.3	85.7	99.3	140.7	555.4	240.8	47.1	1.1
Hardwoods:														
White oak	406.1	0.5	--	1.3	0.3	--	0.3	--	315.5	15.2	48.2	21.2	3.4	0.2
Select red oak	992.8	3.7	3.1	3.9	.6	0.4	--	0.2	695.0	10.8	181.0	70.7	23.1	.3
Other red oak	367.6	8.3	1.0	1.8	--	--	--	--	321.7	1.6	12.7	17.2	1.8	.9
Hickory	107.4	--	--	--	--	--	.2	--	76.5	.7	27.4	1.9	.6	.1
Yellow birch	219.6	--	--	--	9.3	.2	3.2	.2	.6	18.4	183.0	3.3	1.4	--
Hard maple	938.4	--	.3	1.1	4.7	.2	.3	--	26.3	12.2	868.8	16.5	7.7	.3
Soft maple	646.7	--	.5	7.0	16.0	.6	3.3	.5	61.4	167.3	305.8	65.1	19.2	--
Beech	25.8	--	--	--	--	--	--	--	--	1.0	24.8	--	--	--
Ash	505.6	--	-	.9	10.5	--	10.5	--	20.1	240.9	191.2	26.3	4.3	.9
Balsam poplar	32.6	--	--	-	1.9	--	.4	.4	.5	5.6	3.7	18.3	1.8	--
Cottonwood	19.5	--	--	.2	-	--	--	--	2.7	11.3	2.4	2.4	.5	--
Paper birch	727.5	1.8	3.5	5.5	26.3	2.5	10.3	3.5	74.7	34.0	164.9	177.1	223.4	--
Bigtooth aspen	519.2	4.8	2.0	2.1	2.8	.8	-	--	119.8	8.0	51.3	313.1	14.5	--
Quaking aspen	1,640.3	14.0	14.2	13.6	48.8	8.1	5.3	2.2	81.8	46.7	192.3	1,167.6	44.4	1.3
Basswood	559.6	--	--	.7	1.6	--	1.2	--	35.2	24.8	476.1	17.1	2.9	--
Butternut	18.3	--	--	--	--	--	-	--	6.6	.2	10.2	1.2	.1	--
Black walnut	7.5	--	-	--	--	--	--	--	5.3	--	2.2	--	--	--
Black cherry	69.6	--	--	--	2.1	--	--	.3	28.5	1.9	25.1	11.2	.4	.1
Elm	695.4	.2	--	1.4	4.9	--	5.9	.5	45.2	201.8	399.5	30.4	3.8	1.8
Other hardwoods	21.9	-	.6	--	-	--	.1	--	3.0	10.7	4.0	3.4	.1	--
Nonstocked, all species	--	-	-	--	-	--	-	--	--	--	--	--	--	--
All hardwoods	8,521.4	33.3	25.8	39.5	129.8	12.8	41.0	7.8	1,920.4	813.1	3,174.6	1,964.0	353.4	5.9
All species	10,996.1	364.2	187.5	228.4	442.0	78.4	286.3	93.5	2,019.7	953.8	3,730.0	2,204.8	400.5	7.0

Table 43. – Net volume of sawtimber on commercial forest land, by species and forest type, Wisconsin, 1968
(Million board feet)[1]

Species	All forest types	Forest types												
		Jack pine	Red pine	White pine	Balsam fir-white spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-cottonwood	Maple-beech-birch	Aspen	Paper birch	Nonstocked
Softwoods:														
White pine	1,944.6	28.4	92.6	707.8	71.1	19.3	12.5	23.6	161.0	91.2	509.5	192.1	34.8	0.7
Red pine	843.9	46.0	316.4	91.3	20.1	21.4	1.0	3.8	83.2	4.6	67.1	154.7	34.3	-
Jack pine	561.3	331.7	20.0	15.3	1.3	2.5	--	--	92.4	4.1	3.9	79.9	10.2	-
White spruce	203.9	--	1.2	10.5	67.1	4.0	9.5	1.1	--	23.7	40.1	40.0	5.1	1.6
Black spruce	50.5	.7	--	2.3	12.5	9.3	5.2	7.1	--	5.4	4.3	3.7	-	--
Balsam fir	460.6	--	4.5	12.0	186.0	12.1	10.9	1.4	—	30.3	139.2	47.3	16.9	--
Hemlock	1,583.8	--	--	7.3	47.3	4.5	43.1	1.3	1.0	55.1	1,410.3	5.8	8.1	-
Tamarack	117.1	--	.8	.7	1.6	5.3	9.9	52.6	3.7	22.8	—	16.3	2.6	.8
Northern white-cedar	730.4	--	1.2	10.9	84.6	2.7	331.6	2.4	--	107.8	172.6	10.3	4.3	--
Other softwoods	1.0	--	1.0	--	--	--	--	--	—	--	--	--	—	--
Total softwoods	6,497.1	406.8	437.7	858.1	491.6	81.1	423.7	93.3	341.3	345.0	2,347.0	550.1	118.3	3.1
Hardwoods:														
White oak	1,091.8	--	--	4.4	--	--	0.6	--	855.2	49.4	144.6	27.1	9.3	1.2
Select red oak	2,889.2	6.4	3.0	11.9	1.2	--	--	--	2,092.3	31.8	578.2	108.0	55.0	1.4
Other red oak	825.0	9.8	2.4	2.7	--	--	--	--	733.3	3.2	35.3	32.3	4.0	2.0
Hickory	107.3	--	--	--	--	--	.4	--	72.6	1.1	30.8	1.9	.5	--
Yellow birch	642.0	--	--	--	33.9	0.6	7.1	0.9	1.3	40.9	547.9	7.0	2.4	-
Hard maple	2,119.4	--	.8	2.4	8.4	.9	--	--	57.8	21.7	2,003.5	13.4	9.8	.7
Soft maple	980.2	--	--	17.4	27.3	.7	6.6	.6	69.5	383.7	440.3	23.2	10.9	--
Beech	87.0	--	--	--	--	--	—	--	--	1.3	85.7	--	--	-
Ash	765.7	--	--	1.6	10.9	--	7.3	--	25.5	360.7	344.5	10.8	3.4	1.0
Balsam poplar	80.6	--	--	--	2.8	--	2.1	—	.9	23.2	12.8	34.0	4.8	--
Cottonwood	65.8	--	--	1.0	--	—	--	--	8.8	39.1	8.3	6.7	1.9	-
Paper birch	376.4	--	3.4	5.4	10.1	—	9.1	.9	43.8	31.6	146.8	46.9	78.4	-
Bigtooth aspen	740.8	3.9	1.1	3.6	7.1	.9	—	-	247.5	15.2	108.1	328.8	24.6	--
Quaking aspen	1,368.5	8.0	15.6	20.5	48.8	5.5	7.3	--	60.7	71.4	296.9	778.9	53.4	1.5
Basswood	1,005.8	--	--	2.9	3.0	--	3.3	--	69.7	54.5	855.9	13.4	3.1	-
Butternut	43.9	--	--	--	--	--	--	—	15.7	.7	25.2	2.3	--	--
Black walnut	22.5	--	--	--	--	--	--	-	15.5	—	7.0	--	--	--
Black cherry	72.0	--	--	--	1.0	--	--	--	41.4	2.6	22.1	4.9	—	--
Elm	1,906.6	--	--	2.9	11.6	—	15.2	.3	106.2	596.0	1,122.9	40.8	6.6	4.1
Other hardwoods	68.1	--	2.9	--	--	--	.7	--	3.5	40.1	13.2	7.1	.6	-
Noncommercial species	--	--	--	--	--	--	--	-	--	--	--	--	—	-
Total hardwoods	15,258.6	28.1	29.2	76.7	166.1	8.6	59.7	2.7	4,521.2	1,768.2	6,830.0	1,487.5	268.7	11.9
All species	21,755.7	434.9	466.9	934.8	657.7	89.7	483.4	96.0	4,862.5	2,113.2	9,177.0	2,037.6	387.0	15.0

1/ International 1/4-inch rule.

Table 44. – Net volume of growing stock on commercial forest land by county and species group, Wisconsin, 1968
(Thousand cubic feet)

County	All species	Softwoods	Oak	Yellow birch	Hard maple	Ash	Aspen	Elm	Other hardwoods
Adams	**127,142**	**37,896**	39,705	893	3,112	3,033	21,757	4,922	15,824
Ashland	422,105	109,376	22,112	13,620	50,947	25,217	88,590	16,851	95,392
Barron	122,379	18,668	14,512	2,947	13,414	6,944	31,545	6,249	28,100
Bayfield	572,308	151,791	52,006	13,169	52,211	25,525	139,459	16,906	121,241
Brown	32,777	3,950	4,424	284	3,049	3,840	2,149	7,410	7,671
Buffalo	143,148	1,880	66,794	111	8,074	4,148	13,778	13,809	34,554
Burnett	211,104	52,851	34,618	2,283	10,120	8,801	60,782	7,047	34,602
Calumet	18,446	1,793	4,945	126	1,288	2,015	1,248	2,844	4,187
Chippewa	122,861	20,090	35,558	1,659	5,467	4,361	27,334	7,070	21,322
Clark	163,103	26,781	38,544	2,836	9,211	6,502	37,691	11,004	30,534
Columbia	60,285	4,116	24,016	237	3,034	4,424	5,198	6,525	12,735
Crawford	107,930	1,130	50,947	95	4,945	2,836	13,027	9,686	25,264
Dane	57,394	1,793	29,301	150	2,876	2,844	3,500	4,748	12,182
Dodge	24,103	2,022	5,767	134	1,722	2,639	1,936	4,440	5,443
Door	85,265	20,248	7,244	616	6,359	8,137	11,400	14,647	16,614
Douglas	384,311	107,076	26,797	6,020	24,553	17,941	117,441	14,394	70,089
Dunn	111,050	1,943	50,536	95	6,170	3,239	11,605	10,831	26,631
Eau Claire	90,479	16,519	31,466	798	2,899	2,520	18,478	4,092	13,707
Florence	233,903	61,280	5,980	20,169	41,420	2,931	55,134	15,089	31,900
Fond du Lac	30,210	3,350	8,571	158	1,588	3,176	2,449	4,266	6,652
Forest	448,965	145,265	4,195	17,262	76,164	10,468	76,132	28,874	90,605
Grant	120,293	1,667	58,247	103	5,601	2,970	13,754	10,586	27,365
Green	25,801	[illegible]	12,047	87	1,398	1,580	1,319	2,686	5,333
Green Lake	20,643	1,485	7,260	95	1,462	1,533	1,422	2,828	4,558
Iowa	90,645	5,017	40,519	63	3,982	2,315	10,080	8,050	20,619
Iron	290,443	57,685	19,118	7,963	34,578	20,374	63,777	17,159	69,789
Jackson	183,770	88,497	58,436	1,849	6,826	5,040	36,434	8,595	28,093
Jefferson	23,787	2,275	7,466	134	1,635	2,220	1,398	3,595	5,064
Juneau	139,380	41,355	44,090	1,406	4,337	5,285	23,139	7,916	21,852
Kenosha	7,821	537	1,833	47	830	743	474	1,485	1,872
Kewaunee	26,512	3,729	3,547	205	2,528	3,168	2,077	5,467	5,791
La Crosse	81,804	1,130	38,907	55	3,705	2,291	8,303	7,853	19,560
Lafayette	28,851	632	14,354	24	1,390	703	3,105	2,481	6,162
Langlade	287,078	62,916	4,921	7,379	49,841	9,132	58,152	24,909	69,828
Lincoln	307,057	53,024	13,359	5,870	34,239	22,231	73,019	25,501	79,814
Manitowoc	51,239	5,980	8,856	395	4,211	5,957	3,602	10,467	11,771

(Continued on next page)

Table 44 continued

County	All species	Softwoods	Oak	Yellow birch	Hard maple	Ash	Aspen	Elm	Other hardwoods
Marathon	272,463	41,806	55,774	6,826	22,199	13,312	51,832	24,166	56,548
Marinette	485,826	127,150	57,078	2,512	22,215	24,419	119,677	25,075	107,700
Marquette	53,617	10,443	19,640	427	1,390	2,022	7,979	3,065	8,651
Milwaukee	--	--	--	--	--	--	--	--	--
Monroe	127,972	21,093	54,984	1,066	4,361	3,192	18,533	5,617	19,126
Oconto	330,378	159,106	8,761	3,002	10,476	17,119	59,132	24,869	47,913
Oneida	482,240	209,129	30,794	6,620	15,318	9,275	111,532	4,851	94,721
Outagamie	45,780	5,538	8,129	348	3,128	5,980	3,871	8,279	10,507
Ozaukee	9,472	916	2,275	55	592	822	1,359	1,288	2,165
Pepin	39,982	411	18,178	24	2,101	1,145	4,708	3,816	9,599
Pierce	53,175	553	26,876	47	3,350	1,224	5,475	4,661	10,989
Polk	161,484	32,793	33,686	2,149	9,599	6,138	43,442	5,972	27,705
Portage	100,022	18,794	27,919	1,683	5,451	4,535	15,215	7,576	18,849
Price	499,809	134,355	27,697	14,970	53,886	34,484	101,578	24,269	108,570
Racine	12,506	933	2,465	87	1,098	1,311	1,043	2,496	3,073
Richland	84,024	1,438	40,100	79	5,388	2,125	8,177	8,105	18,612
Rock	22,831	727	10,609	79	1,359	1,501	1,359	2,323	4,874
Rusk	244,292	36,680	19,308	5,783	27,002	15,413	68,801	13,130	58,175
St. Croix	41,649	853	18,549	24	2,046	1,003	7,742	3,223	8,209
Sauk	128,723	2,165	62,600	103	7,189	3,207	13,651	11,621	28,187
Sawyer	470,745	105,528	30,075	11,574	45,085	25,960	130,816	18,691	103,016
Shawano[1/]	576,241	194,483	45,844	22,522	82,783	29,885	44,517	57,962	98,245
Sheboygan	34,270	4,305	8,248	205	2,315	3,523	3,326	4,930	7,418
Taylor	280,237	51,832	13,572	10,681	39,050	21,701	58,626	14,054	70,721
Trempealeau	89,104	1,351	43,023	79	4,685	2,244	9,440	8,011	20,271
Vernon	119,724	1,304	62,236	95	6,794	2,370	13,193	9,756	23,976
Vilas	380,827	135,825	23,708	11,723	41,814	1,493	88,014	4,993	73,257
Walworth	19,940	1,249	6,675	103	1,406	1,825	1,296	2,962	4,424
Washburn	238,896	52,424	24,601	3,658	16,282	11,992	74,615	9,504	45,820
Washington	30,684	2,891	6,233	253	2,504	3,642	1,375	6,407	7,379
Waukesha	27,050	3,073	10,135	111	980	2,228	2,236	2,812	5,475
Waupaca	88,259	18,004	21,425	1,327	3,895	4,764	15,026	6,668	17,150
Waushara	66,076	13,762	23,755	679	2,228	2,386	9,259	3,713	10,294
Winnebago	15,950	790	5,174	87	1,304	1,556	553	2,662	3,824
Wood	107,132	25,739	25,580	1,287	3,887	4,621	21,362	6,660	17,996
State total	10,995,772	2,474,541	1,766,704	219,605	938,346	505,500	2,159,448	695,469	2,236,159

1/ Volumes for Menominee County have been combined with Shawano County.

Table 45. – Net volume of sawtimber on commercial forest land by county and species group, Wisconsin, 1968
(Thousand board feet)[1]

County	All species	Softwoods	Oak	Yellow birch	Hard maple	Ash	Aspen	Elm	Other hardwoods
Adams	234,402	70,533	95,960	1,563	8,737	4,893	15,048	15,027	22,641
Ashland	651,481	256,355	38,161	32,555	65,568	32,310	92,937	40,891	92,704
Barron	204,412	55,725	26,496	9,374	22,537	9,173	36,549	16,086	28,472
Bayfield	844,308	351,977	58,916	33,530	66,419	38,400	144,409	42,087	108,570
Brown	87,729	7,589	16,700	508	8,545	7,130	2,316	24,379	20,562
Buffalo	406,468	4,773	232,621	290	25,318	9,855	25,217	36,213	72,181
Burnett	292,939	96,487	55,191	7,395	16,975	10,646	61,354	17,484	27,407
Calumet	47,294	3,524	17,757	173	3,404	3,188	1,185	8,505	9,558
Chippewa	224,317	56,202	79,264	2,824	14,345	5,766	18,473	19,775	27,668
Clark	306,826	81,634	89,642	4,981	24,492	8,916	23,860	31,295	42,006
Columbia	159,947	6,576	86,949	347	7,919	6,847	5,035	19,551	26,723
Crawford	288,695	3,327	171,013	218	15,247	6,199	20,896	24,375	47,420
Dane	161,916	4,244	102,855	182	7,404	4,587	5,087	14,331	23,226
Dodge	63,372	3,376	21,517	223	5,057	4,633	1,569	13,640	13,357
Door	177,249	33,333	27,116	818	16,433	12,873	5,805	44,541	36,330
Douglas	534,483	206,758	41,687	18,931	38,874	21,895	112,453	34,484	59,401
Dunn	303,749	4,021	171,557	230	19,316	7,242	20,170	28,037	53,176
Eau Claire	174,828	46,190	73,275	1,342	7,582	3,645	12,875	11,750	18,169
Florence	504,039	185,522	7,032	81,669	126,109	2,078	28,474	40,712	32,443
Fond du Lac	75,979	6,427	30,966	210	4,366	5,066	1,757	12,223	14,964
Forest	791,849	369,493	8,431	58,547	169,794	8,700	57,960	41,135	77,789
Grant	324,837	3,943	195,808	260	17,341	6,683	23,543	26,642	50,617
Green	75,375	2,170	44,706	133	3,580	2,568	2,177	8,532	11,509
Green Lake	58,794	3,191	27,318	131	4,352	2,661	1,485	8,919	10,737
Iowa	231,416	2,860	134,280	168	12,280	5,072	16,357	19,910	40,489
Iron	482,476	151,805	35,623	24,687	54,409	26,924	74,280	43,251	71,497
Jackson	339,162	93,317	133,640	3,167	17,714	7,032	24,636	24,507	35,149
Jefferson	65,788	4,258	28,368	202	4,561	3,701	1,443	11,220	12,035
Juneau	281,361	67,754	114,082	2,376	12,182	8,572	16,913	24,357	35,125
Kenosha	21,979	1,120	6,998	99	2,234	1,371	475	4,897	4,785
Kewaunee	64,778	6,853	13,272	360	6,056	5,255	1,585	17,237	14,160
La Crosse	230,319	2,470	133,883	179	11,612	5,497	15,790	20,492	40,396
Lafayette	82,334	1,075	50,610	63	4,405	1,625	5,853	6,349	12,354
Langlade	500,221	124,981	11,875	23,842	162,480	9,151	45,776	57,301	64,815
Lincoln	557,306	167,770	26,493	16,391	86,547	46,310	37,384	84,217	92,194
Manitowoc	133,626	10,958	32,991	759	12,053	9,834	3,126	34,121	29,784

(Continued on next page)

Table 45 continued

County	All species	Softwoods	Oak	Yellow birch	Hard maple	Ash	Aspen	Elm	Other hardwoods
Marathon	577,480	127,003	149,652	13,396	61,166	22,257	36,723	73,764	93,519
Marinette	891,003	407,408	86,982	7,721	73,495	16,093	115,289	55,575	128,440
Marquette	117,412	26,064	53,406	647	3,966	3,328	6,902	9,564	14,235
Milwaukee	--	--	--	--	--	--	--	--	--
Monroe	278,083	65,568	135,592	1,825	11,508	5,128	15,734	16,554	26,174
Oconto	716,974	282,975	59,185	8,792	20,249	58,911	71,732	118,948	96,182
Oneida	966,649	659,429	55,606	32,329	35,747	6,984	103,094	11,796	61,664
Outagamie	110,892	10,854	29,082	517	8,599	9,319	3,129	24,663	24,729
Ozaukee	21,888	1,775	8,187	58	1,529	1,192	973	3,779	4,395
Pepin	111,649	1,208	62,922	84	6,574	2,803	7,771	10,116	20,171
Pierce	154,283	1,686	94,613	127	10,661	2,984	10,429	12,420	21,363
Polk	267,072	76,377	62,648	7,423	18,502	7,713	52,013	16,067	26,329
Portage	215,182	49,827	74,044	3,151	14,952	7,569	11,295	23,097	31,247
Price	894,095	348,478	56,554	45,399	87,478	52,940	114,290	65,334	123,622
Racine	33,908	1,935	9,260	159	3,111	2,396	805	8,387	7,855
Richland	235,290	3,632	139,349	176	16,813	4,838	14,728	20,491	35,263
Rock	66,806	1,849	39,035	93	3,693	2,571	2,025	7,064	10,476
Rusk	376,855	105,633	33,465	17,604	41,613	19,779	72,159	32,228	54,374
St. Croix	106,378	1,452	63,093	89	6,462	2,123	9,200	8,533	15,426
Sauk	364,253	4,241	219,394	277	22,681	7,514	24,236	30,280	55,630
Sawyer	702,867	264,993	46,805	30,057	61,697	33,441	129,760	45,665	90,449
Shawano[2/]	1,637,642	712,370	116,410	59,465	284,025	42,857	50,446	164,213	207,856
Sheboygan	79,395	6,573	29,300	288	5,411	5,148	2,275	14,749	15,651
Taylor	435,134	131,181	23,468	24,973	46,396	33,289	62,830	35,440	77,557
Trempealeau	248,464	3,288	147,744	196	14,721	5,260	16,919	20,429	39,907
Vernon	332,553	3,926	212,144	278	21,339	5,291	24,143	24,113	41,319
Vilas	735,999	444,972	38,614	40,692	81,675	1,162	74,822	5,260	48,802
Walworth	54,214	2,632	24,404	169	3,496	3,011	1,317	9,215	9,970
Washburn	337,019	111,700	38,278	11,312	25,777	14,874	73,834	23,442	37,802
Washington	86,316	5,931	23,619	445	7,441	6,341	1,754	21,237	19,548
Waukesha	67,434	4,919	36,291	117	2,335	3,131	2,428	7,688	10,525
Waupaca	171,025	45,087	51,483	2,091	10,149	6,490	10,409	18,992	26,324
Waushara	143,768	32,451	64,139	1,194	6,306	3,967	7,376	11,601	16,734
Winnebago	46,453	2,032	18,967	176	3,608	2,594	756	8,520	9,800
Wood	185,256	49,163	59,207	1,921	10,040	6,122	14,041	18,841	25,921
State total	21,755,745	6,497,203	4,805,995	641,968	2,119,462	765,718	2,109,189	1,906,538	2,909,672

1/ International 1/4-inch rule.
2/ Volumes for Menominee County have been combined with Shawano County.

Table 46. – Net volume of growing stock, sawtimber, and rough, rotten, and short-log trees (cull) on commercial forest land, by individual species, Wisconsin, 1968

Species	Growing stock	Sawtimber	Cull
	Million cubic feet	Million board feet[1/]	Million cubic feet
Softwoods:			
White pine	412.7	1,944.6	14.3
Red pine	241.1	843.9	1.2
Jack pine	417.6	561.3	16.8
White spruce group			
White spruce	81.7	203.9	.7
Norway spruce	--	--	--
Black spruce	92.0	50.5	3.2
Balsam fir	439.0	460.6	5.2
Hemlock	336.2	1,583.8	9.7
Tamarack	111.1	117.1	3.3
Northern white-cedar	342.4	730.4	30.4
Other softwoods			
Scotch pine	.4	1.0	.1
Eastern redcedar	.5	--	.2
Total softwoods	2,474.7	6,497.1	85.1
Hardwoods:			
White oak group			
White oak	320.0	883.6	97.7
Swamp white oak	10.2	32.6	4.3
Bur oak	75.8	174.9	23.4
Chinkapin oak	.1	.7	--
Select red oak group			
Northern red oak	992.8	2,889.2	98.3
Other red oak group			
Northern pin oak	187.1	327.5	73.7
Black oak	180.5	497.5	71.9
Hickory group			
Bitternut hickory	33.4	27.2	3.0
Shagbark hickory	74.0	80.1	4.2
Yellow birch	219.6	642.0	42.5
Hard maple group			
Black maple	.9	3.2	.1
Sugar maple	937.5	2,116.2	123.6
Soft maple group			
Red maple	595.7	841.6	85.7
Silver maple	51.0	138.6	11.3

(Continued on next page)

Table 46 continued

Species	Growing stock	Sawtimber	Cull
	Million cubic feet	Million board feet 1/	Million cubic feet
Hardwood species (Continued):			
American beech	25.8	87.0	7.6
Ash group			
White ash	148.9	272.8	7.6
Black ash	305.8	379.8	10.8
Green ash	50.9	113.1	7.4
Balsam poplar	32.6	80.6	2.2
Cottonwood	19.5	65.8	2.6
Paper birch group			
River birch	8.9	23.2	1.4
Paper birch	718.6	353.2	30.9
Bigtooth aspen	519.2	740.8	20.2
Quaking aspen	1,640.3	1,368.5	111.5
Basswood	559.6	1,005.8	38.3
Butternut	18.3	43.9	7.1
Black walnut	7.5	22.5	2.1
Black cherry	69.6	72.0	13.9
Elm group			
American elm	604.7	1,669.8	68.8
Slippery elm	57.2	159.5	8.5
Rock elm	33.5	77.3	.7
Other hardwoods			
Black willow	15.0	54.6	2.5
Boxelder	3.3	7.5	2.4
Northern catalpa	--	--	.2
Hackberry	1.0	3.0	.1
Honeylocust	--	--	.1
Red mulberry	.2	.7	--
Tupelo, blackgum	--	--	--
Sycamore	--	--	--
Black locust	2.4	2.3	.2
Noncommercial species	--	--	11.9
Total hardwoods	8,521.4	15,258.6	998.7
All species	10,996.1	21,755.7	1,083.8

1/ International 1/4-inch rule.

Table 47. – Net volume of timber in rough, rotten, and short-log (cull) trees on commercial forest land, by species and cull tree class, Wisconsin, 1968

(Million cubic feet)

Species	All cull trees	Rough trees	Short-log trees[1/]	Rotten trees
Softwoods:				
White pine	14.3	5.7	6.4	2.2
Red pine	1.2	.5	.5	.2
Jack pine	16.8	13.3	2.4	1.1
White spruce	.7	.1	.4	.2
Black spruce	3.2	3.0	.1	.1
Balsam fir	5.2	3.1	1.0	1.1
Hemlock	9.7	3.0	2.8	3.9
Tamarack	3.3	1.7	1.0	.6
Northern white-cedar	30.4	9.8	5.3	15.3
Other softwoods	.3	.3	--	--
Total softwoods	85.1	40.5	19.9	24.7
Hardwoods:				
White oak	125.4	50.7	64.1	10.6
Select red oak	98.3	30.6	51.2	16.5
Other red oak	145.6	70.6	56.4	18.6
Hickory	7.2	3.3	3.0	.9
Yellow birch	42.5	13.0	10.9	18.6
Hard maple	123.7	39.5	48.3	35.9
Soft maple	97.0	41.4	29.8	25.8
Beech	7.6	1.7	3.8	2.1
Ash	25.8	12.8	7.0	6.0
Balsam poplar	2.2	.4	.6	1.2
Cottonwood	2.6	.1	2.2	.3
Paper birch	32.3	19.2	6.5	6.6
Bigtooth aspen	20.2	6.9	4.0	9.3
Quaking aspen	111.5	43.5	10.6	57.4
Basswood	38.3	11.8	15.4	11.1
Butternut	7.1	3.5	1.8	1.8
Black walnut	2.1	.9	.8	.4
Black cherry	13.9	9.0	3.1	1.8
Elm	78.0	25.5	43.0	9.5
Other hardwoods	5.5	2.9	1.5	1.1
Noncommercial species	11.9	11.3	--	.6
Total hardwoods	998.7	398.6	364.0	236.1
All species	1,083.8	439.1	383.9	260.8

1/ Volumes are for trees 9.0 inches d.b.h. and larger for softwoods and 11.0 inches d.b.h. and larger for hardwoods. Volumes for rough and rotten trees are for trees 5.0 inches d.b.h. and larger.

Table 48. – Net volume of short-log trees on commercial forest land, by species and diameter class, Wisconsin, 1968
(Million board feet)[1]

Species	All classes	Diameter class (inches at breast height)								
		9.0–10.9	11.0–12.9	13.0–14.9	15.0–16.9	17.0–18.9	19.0–20.9	21.0–22.9	23.0–28.9	29.0+
Softwoods:										
White pine	34.9	6.5	7.6	4.8	4.6	2.7	5.5	0.8	1.8	0.6
Red pine	6.9	2.3	.4	3.8	--	--	--	.4	--	--
Jack pine	24.8	15.5	3.4	5.9	--	--	--	--	--	--
White spruce	16.5	4.7	4.0	7.8	--	--	--	--	--	--
Black spruce	.4	.4	--	--	--	--	--	--	--	--
Balsam fir	24.9	13.9	4.3	6.7	--	--	--	--	--	--
Hemlock	45.0	20.6	10.0	7.8	.7	5.0	.4	--	.5	--
Tamarack	10.6	6.2	2.3	2.1	--	--	--	--	--	--
Northern white-cedar	96.9	57.1	26.3	9.3	3.5	.7	--	--	--	--
Other softwoods	--	--	--	--	--	--	--	--	--	--
Total softwoods	260.9	127.2	58.3	48.2	8.8	8.4	5.9	1.2	2.3	.6
Hardwoods:										
White oak	175.4	--	55.1	33.5	25.8	21.5	14.0	8.0	14.6	2.9
Select red oak	208.2	--	73.5	40.2	34.7	20.6	14.5	9.6	14.1	1.0
Other red oak	234.8	--	82.1	58.5	45.2	22.9	8.0	10.3	7.5	.3
Hickory	10.3	--	5.4	3.7	.7	.5	--	--	--	--
Yellow birch	114.7	--	48.9	17.4	22.9	14.2	.5	.6	8.0	2.2
Hard maple	402.5	--	127.9	115.7	65.8	45.3	23.4	13.8	9.2	1.4
Soft maple	162.7	--	62.5	33.7	29.8	14.9	3.4	2.2	8.7	7.5
Beech	32.6	--	.6	4.7	.9	9.6	13.7	.4	2.7	--
Ash	27.0	--	8.1	5.4	1.9	4.0	.2	6.1	1.0	.3
Balsam poplar	11.5	--	9.7	1.8	--	--	--	--	--	--
Cottonwood	7.5	--	.4	--	.4	--	--	.4	1.4	4.9
Paper birch	56.7	--	36.4	15.4	4.1	.3	--	.5	--	--
Bigtooth aspen	20.6	--	11.4	3.3	5.1	.8	--	--	--	--
Quaking aspen	97.7	--	66.7	25.6	4.5	.5	.4	--	--	--
Basswood	51.9	--	15.3	16.2	8.8	5.1	2.9	.5	1.9	1.2
Butternut	8.0	--	2.0	5.1	.8	.1	--	--	--	--
Black walnut	2.9	--	1.5	.8	--	.6	--	--	--	--
Black cherry	31.3	--	17.8	4.7	7.4	.6	.3	.5	--	--
Elm	220.7	--	65.5	53.3	34.9	27.4	10.0	3.9	16.2	9.5
Other hardwoods	5.4	--	4.3	.1	.1	.2	.1	.3	.3	--
Noncommercial species	--	--	--	--	--	--	--	--	--	--
Total hardwoods	1,882.4	--	695.1	439.1	293.8	189.1	91.4	57.1	85.6	31.2
All species	2,143.3	127.2	753.4	487.3	302.6	197.5	97.3	58.3	87.9	31.8

1/ International 1/4-inch rule.

Table 49. – Net annual growth of growing stock on commercial forest land, by species and diameter class, Wisconsin, 1967
(Thousand cubic feet)

Species	All classes	Diameter class (inches at breast height)										
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0+
Softwoods:												
White pine	13,535	2,382	1,064	1,504	1,854	1,779	1,765	1,416	898	549	321	3
Red pine	12,628	5,966	1,736	1,082	1,010	1,192	853	531	182	66	10	--
Jack pine	27,425	17,341	6,107	2,691	1,022	226	34	4	--	--	--	--
White spruce	4,482	2,083	1,072	755	331	180	58	3	--	--	--	--
Black spruce	7,098	6,195	599	256	26	14	8	--	--	--	--	--
Balsam fir	29,378	20,045	5,733	2,542	903	134	21	--	--	--	--	--
Hemlock	10,127	709	1,130	1,449	1,659	1,505	1,277	927	538	343	365	225
Tamarack	6,447	5,076	896	294	149	18	14	--	--	--	--	--
Northern white-cedar	11,957	8,359	1,813	1,095	458	190	38	1	1	2	--	--
Other softwoods	28	13	8	3	4	--	--	--	--	--	--	--
Total softwoods	123,105	68,169	20,158	11,671	7,416	5,238	4,068	2,882	1,619	960	696	228
Hardwoods:												
White oak	11,219	3,202	1,523	1,801	1,685	1,285	875	471	198	95	76	8
Select red oak	31,889	7,097	4,618	4,671	4,689	3,454	2,726	2,110	1,214	588	660	62
Other red oak	12,092	4,031	1,905	1,782	1,538	1,215	743	442	274	97	64	1
Hickory	3,444	2,180	532	414	202	85	25	2	4	--	--	--
Yellow birch	7,317	2,458	1,210	1,024	929	637	559	318	111	58	12	1
Hard maple	38,861	18,775	5,694	4,400	3,035	2,624	2,018	1,243	716	232	115	9
Soft maple	31,970	18,281	4,673	3,405	2,154	1,487	849	484	322	141	138	36
Beech	812	282	37	70	104	86	90	67	30	29	17	--
Ash	15,325	8,347	2,656	1,909	1,279	647	270	76	49	48	36	8
Balsam poplar	1,133	363	161	219	135	131	46	30	22	23	3	--
Cottonwood	588	18	56	67	71	39	73	45	60	32	71	56
Paper birch	49,333	32,294	10,078	4,705	1,647	447	126	27	7	2	--	--
Bigtooth aspen	26,989	10,334	6,848	5,182	2,899	1,181	410	106	22	7	--	--
Quaking aspen	95,805	46,926	23,559	16,262	6,607	1,955	434	58	4	--	--	--
Basswood	22,701	8,361	4,945	4,063	,446	1,410	811	405	152	74	33	1
Butternut	551	85	56	170	124	83	25	6	2	--	--	--
Black walnut	192	7	47	34	32	32	30	7	2	1	--	--
Black cherry	3,548	2,250	687	357	168	58	16	12	--	--	--	--
Elm	22,418	7,485	3,058	2,899	2,747	2,243	1,614	1,009	643	339	310	71
Other hardwoods	821	189	134	103	156	75	77	55	20	9	3	--
Noncommercial species	--	--	--	--	--	--	--	--	--	--	--	--
Total hardwoods	377,008	172,965	72,477	53,537	32,647	19,174	11,817	6,973	3,852	1,775	1,538	253
All species	500,113	241,134	92,635	65,208	40,063	24,412	15,885	9,855	5,471	2,735	2,234	481

Table 50. – Net annual growth of sawtimber on commercial forest land, by species and diameter class, Wisconsin, 1967
(Thousand board feet)[1]

Species	All classes	Diameter class (inches at breast height)								
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0+
Softwoods:										
White pine	76,195	30,253	9,461	9,376	9,298	7,821	4,938	3,141	1,887	20
Red pine	43,542	22,650	4,757	6,164	4,843	3,301	1,249	479	99	--
Jack pine	75,673	69,306	4,952	1,199	196	20	--	--	--	--
White spruce	10,723	8,131	1,441	860	276	15	--	--	--	--
Black spruce	7,296	7,072	112	73	39	--	--	--	--	--
Balsam fir	46,945	42,404	3,810	619	112	--	--	--	--	--
Hemlock	47,555	8,960	8,729	8,258	7,425	5,586	3,476	2,143	2,687	291
Tamarack	2,805	1,963	674	97	71	--	--	--	--	--
Northern white-cedar	26,975	23,841	2,094	854	173	7	6	--	--	--
Other softwoods	29	14	15	--	--	--	--	--	--	--
Total softwoods	337,738	214,594	36,045	27,500	22,433	16,750	9,669	5,763	4,673	311
Hardwoods:										
White oak	49,902	--	39,747	3,985	2,910	1,673	760	398	374	55
Select red oak	118,159	--	76,707	12,778	10,560	7,663	4,711	2,363	3,080	297
Other red oak	43,564	--	33,656	4,132	2,541	1,548	1,052	383	247	5
Hickory	10,257	--	9,624	427	169	27	10	--	--	--
Yellow birch	34,577	--	26,946	2,646	2,462	1,513	604	325	63	18
Hard maple	100,906	--	69,238	11,847	8,928	5,731	3,462	1,118	527	55
Soft maple	63,886	--	49,261	6,008	3,577	2,156	1,367	647	666	204
Beech	4,211	--	2,892	368	394	271	117	107	62	--
Ash	34,291	--	29,108	3,063	1,229	343	190	167	11	73
Balsam poplar	4,118	--	3,075	590	194	115	69	68	,	--
Cottonwood	2,288	--	973	185	301	172	208	96	193	160
Paper birch	43,793	--	40,716	2,252	613	148	45	19	--	--
Bigtooth aspen	78,571	--	67,061	7,113	3,130	983	241	43	--	--
Quaking aspen	164,719	--	150,066	11,183	2,902	544	24	--	--	--
Basswood	68,586	--	56,193	6,154	3,448	1,731	594	318	141	7
Butternut	3,636	--	3,173	335	91	28	9	--	--	--
Black walnut	1,013	--	740	121	115	28	8	1	--	--
Black cherry	4,866	--	4,512	217	79	58	--	--	--	--
Elm	92,103	--	64,351	10,583	7,493	4,564	2,668	1,315	1,000	129
Other hardwoods	2,481	--	1,358	326	354	247	127	46	23	--
Noncommercial species	--	--	--	--	--	--	--	--	--	--
Total hardwoods	925,927	--	729,397	84,313	51,490	29,543	16,266	7,414	6,501	1,003
All species	1,263,665	214,594	765,442	111,813	73,923	46,293	25,935	13,177	11,174	1,314

1/ International 1/4-inch rule.

Table 51. – Net annual growth of growing stock on commercial forest land, by species and Forest Survey Unit, Wisconsin, 1967
(Thousand cubic feet)

Species	All units	Northeastern units	Northwestern units	Central units	Southwestern units	Southeastern units
Softwoods:						
White pine	13,535	5,586	4,045	3,562	258	84
Red pine	12,628	6,008	3,712	2,424	468	16
Jack pine	27,425	6,192	11,850	9,118	240	25
White spruce	4,482	3,137	1,304	18	--	23
Black spruce	7,098	4,035	2,676	384	--	3
Balsam fir	29,378	14,421	14,006	912	--	39
Hemlock	10,127	6,517	2,296	1,173	--	141
Tamarack	6,447	1,570	2,832	1,742	3	300
Northern white cedar	11,957	5,897	2,103	1,943	--	2,014
Other softwoods	28	--	--	18	7	3
Total softwoods	123,105	53,363	44,824	21,294	976	2,648
Hardwoods:						
White oak	11,219	241	2,221	3,892	3,538	1,327
Select red oak	31,889	7,988	7,697	7,090	7,433	1,681
Other red oak	12,092	1,286	1,524	4,971	3,381	930
Hickory	3,444	115	173	363	2,398	395
Yellow birch	7,317	2,877	3,131	1,195	25	89
Hard maple	38,861	15,064	18,779	2,513	1,675	830
Soft maple	31,970	6,933	13,344	7,840	2,328	1,525
Beech	812	256	--	22	--	534
Ash	15,325	4,509	6,229	1,670	969	1,948
Balsam poplar	1,133	710	247	6	15	155
Cottonwood	588	78	7	--	372	131
Paper birch	49,333	17,763	23,352	5,709	1,760	749
Bigtooth aspen	26,989	7,523	9,975	6,013	2,884	594
Quaking aspen	95,805	28,292	45,724	15,561	3,064	3,164
Basswood	22,701	7,933	10,335	1,719	2,145	569
Butternut	551	126	71	72	250	32
Black walnut	192	--	--	3	140	49
Black cherry	3,548	1,229	860	361	620	478
Elm	22,418	7,136	5,690	3,041	3,326	3,225
Other hardwoods	821	54	7	72	425	263
Noncommercial species	--	--	--	--	--	--
Total hardwoods	377,008	110,113	149,366	62,113	36,748	18,668
All species	500,113	163,476	194,190	83,407	37,724	21,316

Table 52. – Net annual growth of sawtimber on commercial forest land, by species and Forest Survey Unit, Wisconsin, 1967
(Thousand board feet)[1]

Species	All units	Northeastern unit	Northwestern unit	Central unit	Southwestern unit	Southeastern unit
Softwoods:						
White pine	76,195	33,331	26,502	15,456	374	532
Red pine	43,542	23,416	13,728	6,310	85	3
Jack pine	75,673	17,392	33,764	23,366	58	1,093
White spruce	10,723	6,075	4,608	29	—	11
Black spruce	7,296	4,389	2,865	42	--	--
Balsam fir	46,945	17,557	27,668	807	—	913
Hemlock	47,555	31,298	11,510	4,546	—	201
Tamarack	2,805	500	1,878	315	--	112
Northern white-cedar	26,975	11,628	5,841	2,790	--	6,716
Other softwoods	29	--	--	29	--	--
Total softwoods	337,738	145,586	128,364	53,690	517	9,581
Hardwoods:						
White oak	49,902	1,293	5,304	17,861	19,691	5,753
Select red oak	118,159	21,752	23,859	28,541	37,192	6,815
Other red oak	43,564	2,452	3,402	17,638	16,517	3,555
Hickory	10,257	1,496	39	1,514	5,342	1,866
Yellow birch	34,577	16,971	14,205	2,634	671	96
Hard maple	100,906	42,290	39,457	9,672	6,109	3,378
Soft maple	63,886	18,956	20,162	14,663	6,746	3,359
Beech	4,211	1,288	--	49	--	2,874
Ash	34,291	5,977	10,837	5,940	3,417	8,120
Balsam poplar	4,118	1,644	1,296	--	—	1,178
Cottonwood	2,288	170	--	--	1,717	401
Paper birch	43,793	17,763	13,703	2,431	5,626	4,270
Bigtooth aspen	78,571	24,059	25,944	10,300	13,593	4,675
Quaking aspen	164,719	51,108	85,221	22,083	4,044	2,263
Basswood	68,586	12,646	38,691	4,067	10,110	3,072
Butternut	3,636	1,795	99	118	1,607	17
Black walnut	1,013	--	--	12	870	131
Black cherry	4,866	1,049	12	592	725	2,488
Elm	92,103	24,741	25,524	11,488	15,685	14,665
Other hardwoods	2,481	941	5	278	680	577
Noncommercial species	--	--	--	--	--	--
Total hardwoods	925,927	248,391	307,760	149,881	150,342	69,553
All species	1,263,665	393,977	436,124	203,571	150,859	79,134

1/ International 1/4-inch rule.

Table 53. – Timber removals from growing stock on commercial forest land, by item and softwoods and hardwoods, Wisconsin, 1967 (Thousand cubic feet)

Item	All species	Softwoods	Hardwoods
Roundwood products:			
Saw logs	43,216	4,770	38,446
Veneer logs and bolts	3,345	10	3,335
Pulpwood	100,664	21,416	79,248
Cooperage logs and bolts	183	--	183
Piling	75	17	58
Poles	387	368	19
Posts	1,677	943	734
Other	4,680	--	4,680
Fuelwood	5,951	115	5,836
All products	160,178	27,639	132,539
Logging residues	14,972	1,217	13,755
Other removals	58,000	1,100	56,900
Total removals	233,150	29,956	203,194

Table 54. – Timber removals from live sawtimber on commercial forest land, by item and softwoods and hardwoods, Wisconsin, 1967 (Thousand board feet)[1]

Item	All species	Softwoods	Hardwoods
Roundwood products:			
Saw logs	258,207	28,341	229,866
Veneer logs and bolts	21,769	65	21,704
Pulpwood	238,334	64,172	174,162
Cooperage logs and bolts	1,372	--	1,372
Piling	454	88	366
Poles	1,559	1,484	75
Posts	2,586	989	1,597
Other	24,396	--	24,396
Fuelwood	19,521	387	19,134
All products	568,198	95,526	472,672
Logging residues	23,270	1,613	21,657
Other removals	58,700	2,900	55,800
Total removals	650,168	100,039	550,129

1/ International 1/4-inch rule.

Table 55. – Timber removals from growing stock on commercial forest land, by species and Forest Survey Unit, Wisconsin, 1967
(Thousand cubic feet)

Species	All units	Northeastern unit	Northwestern unit	Central unit	Southwestern unit	Southeastern unit
Softwoods:						
White pine	4,162	2,241	693	925	171	132
Red pine	1,770	696	560	448	37	29
Jack pine	13,295	3,179	4,978	5,021	55	62
White spruce	543	392	129	8	--	14
Black spruce	612	441	145	23	--	3
Balsam fir	3,963	2,193	1,705	52	--	13
Hemlock	4,237	2,737	1,204	232	--	64
Tamarack	329	130	110	64	1	24
Northern white-cedar	1,043	637	40	106	--	260
Other softwoods	2	--	--	1	1	--
Total softwoods	29,956	12,646	9,564	6,880	265	601
Hardwoods:						
White oak	8,142	64	749	2,426	3,819	1,084
Select red oak	24,558	1,422	3,160	8,950	9,703	1,323
Other red oak	9,083	526	1,168	3,310	3,589	490
Hickory	2,013	236	197	288	1,192	100
Yellow birch	3,037	1,573	1,079	371	8	6
Hard maple	17,551	6,303	6,110	2,510	1,972	656
Soft maple	9,732	1,494	3,456	2,793	1,036	953
Beech	334	189	--	15	--	130
Ash	7,116	1,291	3,526	1,221	610	468
Balsam poplar	85	--	67	3	3	12
Cottonwood	449	14	3	43	215	174
Paper birch	10,497	1,994	6,661	1,125	634	83
Bigtooth aspen	21,059	9,944	8,360	1,851	815	89
Quaking aspen	66,532	31,417	27,657	5,849	1,327	282
Basswood	8,198	1,227	3,457	1,304	1,816	394
Butternut	343	66	58	52	148	19
Black walnut	292	3	1	9	258	21
Black cherry	462	199	147	43	46	27
Elm	13,300	2,937	3,166	2,772	2,309	1,116
Other hardwoods	411	79	82	130	85	35
Noncommercial species	--	--	--	--	--	--
Total hardwoods	203,194	60,978	69,104	35,065	29,585	8,462
All species	233,150	73,624	78,668	41,945	29,850	9,063

Table 56. — Timber removals from live sawtimber on commercial forest land, by species and Forest Survey Unit, Wisconsin, 1967
(Thousand board feet)[1]

Species	All units	Northeastern unit	Northwestern unit	Central unit	Southwestern unit	Southeastern unit
Softwoods:						
White pine	22,414	12,637	3,466	4,564	984	763
Red pine	6,196	3,026	1,739	1,294	57	80
Jack pine	28,247	6,741	10,702	10,507	121	176
White spruce	3,386	2,443	832	54	--	57
Black spruce	838	604	169	51	--	14
Balsam fir	14,227	7,900	6,141	137	--	49
Hemlock	21,414	13,902	6,036	1,108	--	368
Tamarack	985	466	358	108	--	53
Northern white-cedar	2,331	1,349	112	158	--	712
Other softwoods	1	--	--	1	--	--
Total softwoods	100,039	49,068	29,555	17,982	1,162	2,272
Hardwoods:						
White oak	23,911	349	1,695	6,870	10,310	4,687
Select red oak	91,847	6,880	8,276	32,179	38,247	6,265
Other red oak	26,226	1,965	2,363	9,188	10,921	1,789
Hickory	3,188	526	365	645	1,394	258
Yellow birch	11,962	6,776	3,912	1,178	51	45
Hard maple	63,978	31,118	13,593	9,234	7,128	2,905
Soft maple	24,623	5,351	5,514	7,251	1,871	4,636
Beech	1,560	942	--	60	--	558
Ash	17,038	4,259	6,672	3,110	1,379	1,618
Balsam poplar	179	--	144	21	2	12
Cottonwood	1,853	74	5	243	642	889
Paper birch	19,622	6,105	11,178	1,522	621	196
Bigtooth aspen	64,025	32,861	23,968	5,698	1,179	319
Quaking aspen	118,278	60,706	44,277	10,527	2,179	589
Basswood	28,330	6,604	8,568	5,048	6,305	1,805
Butternut	1,304	279	196	244	544	41
Black walnut	1,677	25	9	56	1,446	141
Black cherry	1,598	624	397	162	256	159
Elm	46,906	12,885	8,609	9,726	5,842	9,844
Other hardwoods	2,024	472	291	770	446	45
Noncommercial species	--	--	--	--	--	--
Total hardwoods	550,129	178,801	140,032	103,732	90,763	36,801
All species	650,168	227,869	169,587	121,714	91,925	39,073

1/ International 1/4-inch rule.

Table 57. – Net annual growth and removals of growing stock on commercial forest land, by species, Wisconsin, 1967

(Thousand cubic feet)[1]

Species	Net Annual Growth	Annual Timber Removals
Softwoods:		
White pine	13,535	4,162
Red pine	12,628	1,770
Jack pine	27,425	13,295
White spruce	4,482	543
Black spruce	7,098	612
Balsam fir	29,378	3,963
Hemlock	10,127	4,237
Tamarack	6,447	329
Northern white-cedar	11,957	1,043
Other softwoods	28	2
Total softwoods	123,105	29,956
Hardwoods:		
White oak	11,219	8,142
Select red oak	31,889	24,558
Other red oak	12,092	9,083
Hickory	3,444	2,013
Yellow birch	7,317	3,037
Hard maple	38,861	17,551
Soft maple	31,970	9,732
Beech	812	334
Ash	15,325	7,116
Balsam poplar	1,133	85
Cottonwood	588	449
Paper birch	49,333	10,497
Bigtooth aspen	26,989	21,059
Quaking aspen	95,805	66,532
Basswood	22,701	8,198
Butternut	551	343
Black walnut	192	292
Black cherry	3,548	462
Elm	22,418	13,300
Other hardwoods	821	411
Noncommercial species	--	--
Total hardwoods	377,008	203,194
All species	500,113	233,150

Table 58. – Net annual growth and removals of sawtimber on commercial forest land, by species, Wisconsin, 1967

(Thousand board feet)[1]

Species	Net Annual Growth	Annual Timber Removals
Softwoods:		
White pine	76,195	22,414
Red pine	43,542	6,196
Jack pine	75,673	28,247
White spruce	10,723	3,386
Black spruce	7,296	838
Balsam fir	46,945	14,227
Hemlock	47,555	21,414
Tamarack	2,805	985
Northern white-cedar	26,975	2,331
Other softwoods	29	1
Total softwoods	337,738	100,039
Hardwoods:		
White oak	49,902	23,911
Select red oak	118,159	91,847
Other red oak	43,564	26,226
Hickory	10,257	3,188
Yellow birch	34,577	11,962
Hard maple	100,906	63,978
Soft maple	63,886	24,623
Beech	4,211	1,560
Ash	34,291	17,038
Balsam poplar	4,118	179
Cottonwood	2,288	1,853
Paper birch	43,793	19,622
Bigtooth aspen	78,571	64,025
Quaking aspen	164,719	118,278
Basswood	68,586	28,330
Butternut	3,636	1,304
Black walnut	1,013	1,677
Black cherry	4,866	1,598
Elm	92,103	46,906
Other hardwoods	2,481	2,024
Noncommercial species	--	--
Total hardwoods	925,927	550,129
All species	1,263,665	650,168

1/ International 1/4-inch rule.

Table 59. – Net annual growth and removals of growing stock on commercial forest land, by ownership class and softwoods and hardwoods, Wisconsin, 1967
(Thousand cubic feet)

Ownership class	Net annual growth			Annual removals		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
National Forest	52,867	17,438	35,429	20,699	2,419	18,280
Other public	119,649	31,891	87,758	32,196	5,605	26,591
Forest industry	48,979	16,402	32,577	35,195	8,435	26,760
Farmer and miscellaneous private	278,618	57,374	221,244	145,060	13,497	131,563
All ownerships	500,113	123,105	377,008	233,150	29,956	203,194

Table 60. – Net annual growth and removals of sawtimber on commercial forest land, by ownership class and softwoods and hardwoods, Wisconsin, 1967
(Thousand board feet)[1]

Ownership class	Net annual growth			Annual removals		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
National Forest	124,055	52,595	71,460	40,712	7,760	32,952
Other public	219,900	81,682	138,218	59,863	16,141	43,722
Forest industry	135,469	53,093	82,376	103,693	32,242	71,451
Farmer and miscellaneous private	784,241	150,368	633,873	445,900	43,896	402,004
All ownerships	1,263,665	337,738	925,927	650,168	100,039	550,129

1/ International 1/4-inch rule.

Table 61. – Annual mortality of growing stock and sawtimber on commercial forest land, by species, Wisconsin, 1967

Species	Growing stock	Sawtimber
	thousand cubic feet	thousand board feet 1/
Softwoods:		
White pine	1,154	4,075
Red pine	446	2,481
Jack pine	3,397	5,172
White spruce	64	291
Black spruce	622	307
Balsam fir	3,896	6,178
Hemlock	2,386	11,097
Tamarack	675	954
Northern white-cedar	1,748	4,273
Other softwoods	--	--
Total softwoods	14,388	34,788
Hardwoods:		
White oak	865	1,003
Select red oak	5,435	16,920
Other red oak	3,568	6,248
Hickory	175	84
Yellow birch	1,157	2,788
Hard maple	1,097	1,957
Soft maple	1,546	2,943
Beech	-	-
Ash	1,873	4,170
Balsam poplar	249	911
Cottonwood	-	-
Paper birch	1,247	868
Bigtooth aspen	2,248	3,282
Quaking aspen	15,986	9,690
Basswood	393	434
Butternut	455	1,016
Black walnut	-	-
Black cherry	583	420
Elm	8,404	1,511
Other hardwoods	244	35
Noncommercial species	-	-
Total hardwoods	45,525	76,618
All species	59,913	111,406

1/ International 1/4-inch rule.

Table 62. – Annual mortality of growing stock and sawtimber on commercial forest land, by ownership class and softwoods and hardwoods, Wisconsin, 1967

Ownership class	Growing stock			Sawtimber		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cubic feet			Thousand board feet [1/]		
National Forest	4,525	1,399	3,126	1,306	760	546
Other public	11,620	3,187	8,433	14,357	6,739	7,618
Forest industry	6,996	3,537	3,459	17,277	11,822	5,455
Farmer and miscellaneous private	36,772	6,265	30,507	78,466	15,467	62,999
All ownerships	59,913	14,388	45,525	111,406	34,788	76,618

1/ International 1/4-inch rule.

Table 63. – Annual mortality of growing stock and sawtimber on commercial forest land, by cause and softwoods and hardwoods, Wisconsin, 1967

Cause	Growing stock			Sawtimber		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
	Thousand cubic feet			Thousand board feet [1/]		
Fire	131	131	--	--	--	--
Animals	752	203	549	861	127	734
Insects	952	909	43	1,265	1,265	--
Weather	13,478	4,198	9,280	29,836	11,891	17,945
Disease	31,124	4,268	26,856	56,075	9,872	46,203
Suppression	886	339	547	995	995	--
Logging	1,416	803	613	3,253	2,368	885
Unknown and other	10,717	3,537	7,180	18,140	8,270	9,870
Timber stand improvement	457	--	457	981	--	981
All causes	59,913	14,388	45,525	111,406	34,788	76,618

1/ International 1/4-inch rule.

Table 64. – Output of timber products, by source of material and softwoods and hardwoods, Wisconsin, 1967

Products and species group	Standard unit	Total output		Roundwood products		Plant byproducts	
		No. of std. units	M cu. ft.	No. of std. units	M cu. ft.	No. of std. units	M cu. ft.
Saw logs:	M bd. ft.[1]						
Softwood		28,680	4,839	28,680	4,839	--	--
Hardwood		243,830	40,256	243,830	40,256	--	--
Total		272,510	45,095	272,510	45,095	--	--
Veneer logs and bolts:	M bd. ft.						
Softwood		69	11	69	11	--	--
Hardwood		22,915	3,678	22,915	3,678	--	--
Total		22,984	3,689	22,984	3,689	--	--
Pulpwood:	Std. cords[2]						
Softwood		290,186	22,888	279,821	22,071	10,365	817
Hardwood		1,126,350	88,953	1,025,578	80,994	100,772	7,959
Total		1,416,536	111,841	1,305,399	103,065	111,137	8,776
Cooperage:	M bd. ft.						
Softwood		--	--	--	--	--	--
Hardwood		1,532	209	1,532	209	--	--
Total		1,532	209	1,532	209	--	--
Piling:	M linear ft.						
Softwood		43	17	43	17	--	--
Hardwood		76	58	76	58	--	--
Total		119	75	119	75	--	--
Poles:	M pieces						
Softwood		44	368	44	368	--	--
Hardwood		2	19	2	19	--	--
Total		46	387	46	387	--	--
Posts (round and split):	M pieces						
Softwood		1,023	1,027	1,023	1,027	--	--
Hardwood		1,198	1,178	1,198	1,178	--	--
Total		2,221	2,205	2,221	2,205	--	--
Other: [3]	M cu. ft.						
Softwood		288	288	--	--	288	288
Hardwood		8,443	8,443	4,687	4,687	3,756	3,756
Total		8,731	8,731	4,687	4,687	4,044	4,044
Total industrial products:							
Softwood		--	29,438	--	28,333	--	1,105
Hardwood		--	142,794	--	131,079	--	11,715
Total		--	172,232	--	159,412	--	12,820
Fuelwood:	Std. cords						
Softwood		11,000	767	6,300	433	4,700	334
Hardwood		385,400	26,903	309,100	21,566	76,300	5,337
Total		396,400	27,670	315,400	21,999	81,000	5,671
All products:							
Softwood		--	30,205	--	28,766	--	1,439
Hardwood		--	169,697	--	152,645	--	17,052
Total		--	199,902	--	181,411	--	18,491

1/ M (meaning thousand) board feet by International 1/4-inch rule.
2/ Rough-wood basis (include chips converted to equivalent standard cords).
3/ Includes roundwood used in manufacturing moulded products, heading, lath, shavings, particleboard, excelsior, charcoal, etc.

Table 65. Output of roundwood products, by source and softwoods and hardwoods, Wisconsin, 1967
(Thousand cubic feet)

Products and species group	All sources	Growing stock trees 1/			Rough and rotten trees	Salvable dead trees	Other sources 2/
		Total	Sawtimber	Poletimber			
Industrial products							
Sawlogs:							
Softwood	4,839	4,770	4,770	--	62	--	7
Hardwood	40,256	38,446	38,407	39	1,122	105	583
Total	45,095	43,216	43,177	39	1,184	105	590
Veneer logs and bolts:							
Softwood	11	10	10	--	1	--	--
Hardwood	3,678	3,335	3,335	--	343	--	--
Total	3,689	3,345	3,345	--	344	--	--
Pulpwood:							
Softwood	22,071	21,416	15,169	6,247	575	--	80
Hardwood	80,994	79,248	37,292	41,956	334	222	1,190
Total	103,065	100,664	52,461	48,203	909	222	1,270
Misc. industrial products							
Cooperage:							
Softwood	--	--	--	--	--	--	--
Hardwood	209	183	183	--	14	--	12
Total	209	183	183	--	14	--	12
Piling:							
Softwood	17	17	17	--	--	--	--
Hardwood	58	58	58	--	--	--	--
Total	75	75	75	--	--	--	--
Poles:							
Softwood	368	368	310	58	--	--	--
Hardwood	19	19	16	3	--	--	--
Total	387	387	326	61	--	--	--
Posts (round and split):							
Softwood	1,027	943	242	701	9	--	75
Hardwood	1,178	734	310	424	222	--	222
Total	2,205	1,677	552	1,125	231	--	297
Other: 3/							
Softwood	--	--	--	--	--	--	--
Hardwood	4,687	4,680	3,398	1,282	5	--	2
Total	4,687	4,680	3,398	1,282	5	--	2
All misc. industrial products:							
Softwood	1,412	1,328	569	759	9	--	75
Hardwood	6,151	5,674	3,965	1,709	241	--	236
Total	7,563	7,002	4,534	2,468	250	--	311
All industrial products:							
Softwood	28,333	27,524	20,518	7,006	647	--	162
Hardwood	131,079	126,703	82,999	43,704	2,040	327	2,009
Total	159,412	154,227	103,517	50,710	2,687	327	2,171
Fuelwood:							
Softwood	433	115	66	49	22	--	296
Hardwood	21,566	5,836	3,391	2,445	1,210	--	14,520
Total	21,999	5,951	3,457	2,494	1,232	--	14,816
All products:							
Softwood	28,766	27,639	20,584	7,055	669	--	458
Hardwood	152,645	132,539	86,390	46,149	3,250	327	16,529
Total	181,411	160,178	106,974	53,204	3,919	327	16,987

1/ On commercial forest land.

2/ Includes trees less than 5.0 inches in diameter, tree tops and limbs from commercial forest areas or material from noncommercial forest land or nonforest land such as fence rows or suburban areas.

3/ Includes roundwood used in manufacturing molded products, heading, lath, shavings, particle board, excelsior, charcoal, etc.

Table 66. – A comparison of the number of primary wood-using plants operating in 1956 and 1967 by Forest Survey Unit, Wisconsin

(In number of plants)

Kind of mill [1]	All units		Northeastern unit		Northwestern unit		Central unit		Southwestern unit		Southeastern unit	
	1956	1967	1956	1967	1956	1967	1956	1967	1956	1967	1956	1967
Sawmills:												
Large [2]	8	6	5	5	--	--	3	1	--	--	--	--
Medium [3]	55	73	13	17	17	12	7	14	13	23	5	7
Small	1,565	739	306	125	340	130	403	182	301	175	215	127
Total	1,628	818	324	147	357	142	413	197	314	198	220	134
Veneer mills												
Standard grade	21	16	8	6	3	4	6	3	1	--	3	3
Container	26	10	4	1	3	2	6	1	4	1	9	5
Total	47	26	12	7	6	6	12	4	5	1	12	8
Cooperage mills	5	3	--	--	--	--	--	--	2	3	3	--
Handle plants	--	--	--	--	--	--	--	--	--	--	--	--
Pulp mills	29	27	7	7	3	3	10	9	--	--	9	8
Charcoal plants	4	2	--	--	1	--	1	--	1	1	1	1
Misc. plants [4]	40	22	6	4	8	7	9	4	9	6	8	1
TOTAL	1,753	898	349	165	375	158	445	214	331	249	253	152

1/ Excludes idle mills.
2/ Annual lumber output of 5 million board feet or more.
3/ Annual lumber output from 1 million to 4.999 million board feet.
4/ Includes lath, particleboard, shaving, excelsior, fence plants, and specialty plants.

Table 67. – Volume of unused residues at primary manufacturing plants, by industry, type of residue, and softwoods and hardwoods, Wisconsin, 1968

(Thousand cubic feet)

Species and type of residue	All industries	Lumber	Veneer	Cooperage	Other
Softwoods					
Course [1]	131	131	—	--	--
Fine [2]	427	427	—	--	--
Total	558	558	--	--	--
Hardwoods					
Course [1]	816	780	25	6	5
Fine [2]	2,669	2,540	110	12	7
Total	3,485	3,320	135	18	12
All species					
Course [1]	947	911	25	6	5
Fine [2]	3,096	2,967	110	12	7
Total	4,043	3,878	135	18	12

1/ Material suitable for chipping such as slabs, edgings, and veneer cores.
2/ Residues not suitable for chipping, such as sawdust and shavings.

Table 68. – Value of timber products to producer, by Forest Survey Unit, Wisconsin, 1968[1]

(Thousand dollars)

Survey unit	All products	Product		
		Pulpwood	Lumber logs	All others
Northeastern unit	15,685	10,420	3,855	1,410
Northwestern unit	10,720	7,970	1,605	1,145
Central unit	7,000	3,170	2,655	1,175
Southwestern unit	4,325	65	2,905	1,355
Southeastern unit	2,015	70	1,495	450
All units	39,745	21,695	12,515	5,535

1/ Value delivered to the mill.

Table 69. – Removals,[1] net annual growth, and inventory of growing stock and sawtimber on commercial forest land, Wisconsin, 1968, and low removals option projections[2] to 1998

GROWING STOCK

Year	Removals			Growth			Inventory		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
	(Million cubic feet)								
1968	233.2	30.0	203.2	500.1	123.1	377.0	10,996.1	2,474.7	8,521.4
1978	270.1	45.0	225.1	538.4	143.3	395.1	13,701.7	3,440.8	10,260.9
1988	333.7	72.0	261.7	552.4	148.7	403.7	16,157.8	4,331.9	11,825.9
1998	426.3	109.9	316.4	545.3	144.4	400.9	17,826.4	4,874.7	12,951.7
	SAWTIMBER								
	(Million board feet)[3]								
1968	650	100	550	1,264	338	926	21,756	6,497	15,259
1978	766	164	602	1,600	469	1,131	29,291	9,174	20,117
1988	1,019	269	750	1,863	560	1,303	37,880	12,259	25,621
1998	1,387	423	964	1,997	594	1,403	45,202	14,568	30,634

1/ Timber removals includes volume "lost" due to land clearing, flooding, thinning, or changes in land use, in addition to timber cut and used.

2/ Based on the following assumptions: (a) that the removals rate will be lower than that for the high removals option, (b) that timber removals for products will increase during the 30-year period at an increasing rate each 10-year period, (c) that the total area of commercial forest land will continue to decline at a rate of 0.141 percent per year, (d) that radial growth will decline over time in relation to the increase of basal area per acre of trees, (e) that the intensity of forest management practiced will continue at the rate indicated by recent trends, (f) that use of both hardwoods and softwoods for pulpwood will increase, but use of hardwoods will increase at a slower rate for most of the projection period.

3/ International 1/4-inch rule.

Table 70. – Removals,[1] net annual growth, and inventory of growing stock and sawtimber on commercial forest land, Wisconsin, 1968, and high removals option projections[2] to 1998

GROWING STOCK

Year	Removals			Growth			Inventory		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
	(Million cubic feet)								
1968	233.2	30.0	203.2	500.1	123.1	377.0	10,996.1	2,474.7	8,521.4
1978	305.8	53.4	252.4	533.5	142.1	391.4	13,514.6	3,398.2	10,116.4
1988	407.9	100.0	307.9	538.3	145.2	393.1	15,298.0	4,076.0	11,222.0
1998	507.2	139.9	367.3	527.6	141.3	386.3	16,003.4	4,281.0	11,722.4
	SAWTIMBER								
	(Million board feet)[3]								
1968	650	100	550	1,264	338	926	21,756	6,497	15,259
1978	867	195	672	1,584	464	1,120	28,759	9,020	19,739
1988	1,244	370	874	1,803	541	1,262	35,272	11,308	23,964
1998	1,624	525	1,099	1,895	564	1,331	39,369	12,300	27,069

1/ Timber removals includes volume "lost" due to land clearing, flooding, thinning, or changes in land use, in addition to timber cut and used.

2/ Based on the following assumptions: (a) that the removals rate will be higher than that for the low removals option, (b) that timber removals for products will increase during the 30-year period but at a decreasing rate each 10-year period, (c) that the total area of commercial forest land will continue to decline at a rate of 0.141 percent per year, (d) that radial growth will decline over time in relation to the increase of basal area per acre of trees, (e) that the intensity of forest management practiced will continue at the rate indicated by recent trends, (f) that use of both hardwoods and softwoods for pulpwood will increase, but use of hardwoods will increase at a slower rate for most of the projection period.

3/ International 1/4-inch rule.

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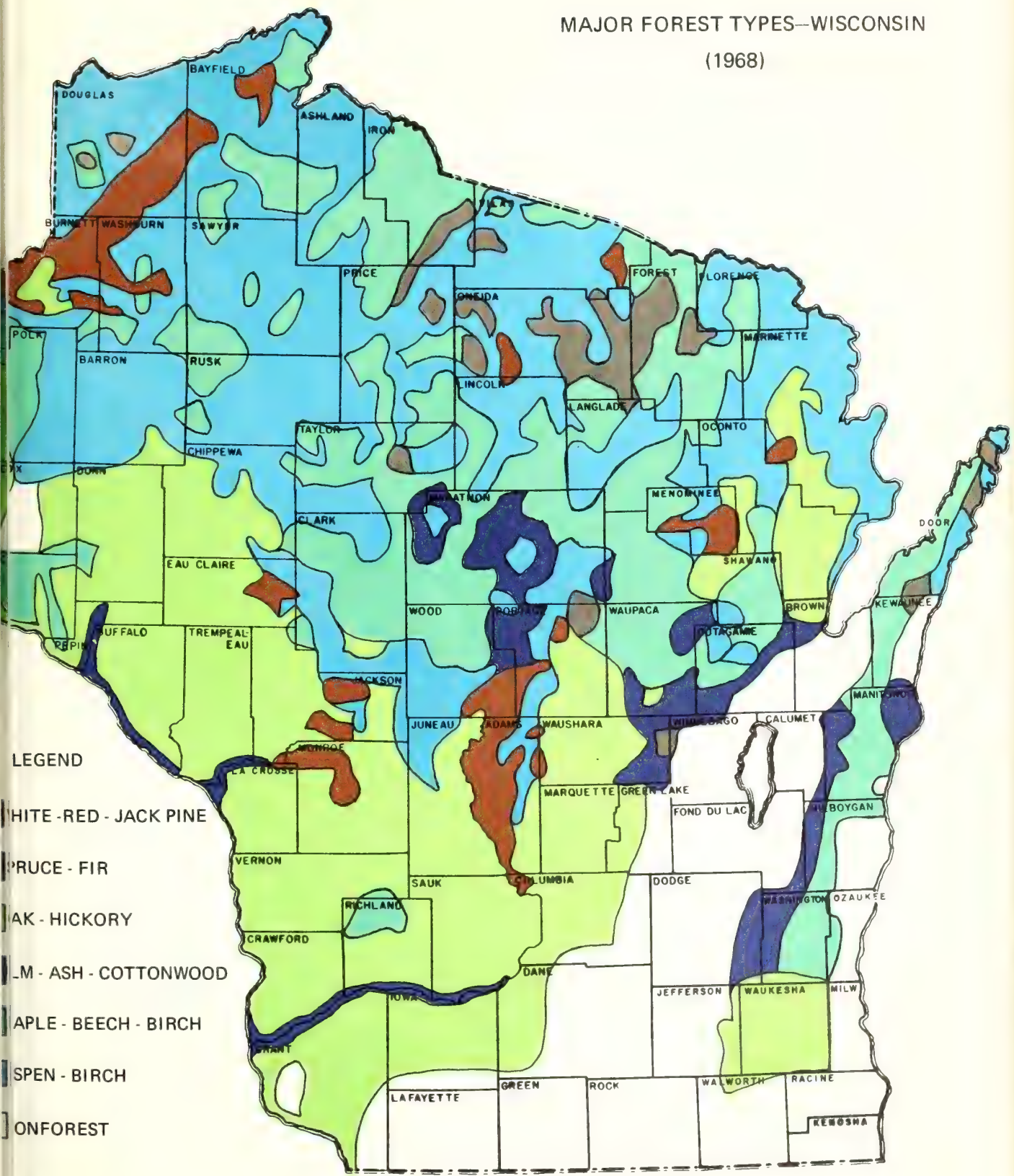
MAJOR FOREST TYPES—WISCONSIN

(1968)



TWO OTHER REPORTS DEALING WITH WISCONSIN'S TIMBER RESOURCE PUBLISHED RECENTLY ARE:

Forest area in Wisconsin counties, 1968, by Burton L. Essex. USDA For. Serv. Res. Note NC-135, 4 p., illus. 1972.

Timber volume in Wisconsin counties, by Arnold J. Ostrom. USDA For. Serv. Res. Note NC-145, 4 p., illus. 1972.

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Missouri's Primary Forest Products Output and Industries 1969

JAMES E. BLYTH and ROBERT MASSENGALE

FOREST SERVICE • U.S. DEPARTMENT OF AGRICULTURE
NORTH CENTRAL FOREST EXPERIMENT STATION

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COVER PHOTOS courtesy of Missouri Conservation Department.

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(Maintained in cooperation with the University of Minnesota)

MISSOURI'S PRIMARY FOREST PRODUCTS OUTPUT AND INDUSTRIES, 1969

James E. Blyth and Robert Massengale

FOREWORD

Information in this report came from a cooperative study by the North Central Forest Experiment Station and the Missouri Conservation Department (MCD). Except for pulpmills and noncommercial sawmills,[1] all Missouri primary wood-using firms were personally canvassed by MCD District Foresters and Farm Foresters. These foresters estimated the log receipts by species and county of origin at noncommercial sawmills. Less than 3 percent of Missouri's saw log receipts went to noncommercial mills in 1969.

Pulpmills using Missouri wood were canvassed by mail questionnaire as part of the Station's annual pulpwood survey. The Station sent questionnaires to all out-of-State mills using Missouri logs and bolts and followed up with phone calls to nonrespondents. Railroads operating in Missouri sent the Station data on the volume of logs loaded on cars in Missouri destined for seaports.

Estimates of fuelwood and post production were made from the latest Census of Housing and Census of Agriculture data and from information on plant residue disposal furnished on the primary[2] mill questionnaires.

The Station edited and compiled the data.

FOREST INDUSTRY TRENDS AND HIGHLIGHTS

- Markets for saw logs, pulpwood, charcoal wood and poles are expected to continue to expand during the next decade. The largest percentage gain will probably be in pulpwood production.

- Veneer log and cooperage markets will be uncertain during the 1970's and will be greatly influenced by consumer tastes and preferences. Wide swings in production may occur.

- Use of plant residue for pulping has been growing rapidly, but 100,000 cords of coarse (chippable) plant residue and 138,000 cords of fine plant residue were not used in 1969. Efforts should be directed toward finding new commercial uses (such as livestock feed) and continuing expansion of existing pulpwood and charcoal outlets for this material.

- Active primary mills are declining in number, but the quantity of wood used per mill is rising. This trend is likely to continue.

- Roundwood production is highest in the Eastern Ozarks and neighboring counties where forest industry is centered. Missouri forests supply nearly all the raw material needs of the primary forest industries.

- Missouri leads all other States in charcoal and cooperage production.

- Missouri harvests more redcedar than any other State and is one of the three leading producers of walnut logs and bolts.

FOREST INDUSTRY OVERVIEW

The timber-based industries are an important component of Missouri's rural economy. According to the 1967 Census of Manufactures, these industries (SIC 24 – Lumber and Wood Products, and SIC 26 – Paper and Allied Products) accounted for the following percentages of all Missouri manufacturing activities:

	Percent
Employment	4.3
Payroll	3.4
Production man-hours	5.0
Wages	4.0
Value added in manufacturing	3.5
Value of shipments	3.1
Capital expenditures (new)	4.1

Many of the 19,300 employed in the wood-based industries are in small towns and rural areas where other types of industrial employment opportunities are scarce.

[1] *Sawmills producing less than 100,000 board feet annually.*

[2] *Mills using logs and bolts or chips, shavings, etc., from logs and bolts.*

Missouri has three major primary wood-using industries – sawmill, charcoal, and cooperage. All but 132 of the 681 primary mills operating in 1969 were sawmills; the remainder included 52 charcoal plants and 36 cooperage mills (table 1). These active mills are only 59 percent of the number operating in 1958 and less than one-fourth the number in 1946. However, the average mill size, in terms of log volume consumed annually, has increased significantly during the last quarter century.

Table 1. Number of active, primary, wood-using plants in Missouri, 1946, 1958, and 1969

Kind of plant	1946	1958	1969
Sawmills:			
Large 1/	2	5	7
Medium 2/	43	103	117
Small 3/	2,548	882	425
Total	2,593	990	549
Cooperage mills	85	36	36
Veneer mills:			
Face, core and specialty	1	1	2
Container	5	2	2
Total	6	3	4
Pulpmills	--	2	2
Charcoal	3	60	52
Handle	19	12	7
Treating plants	6	14	22
Miscellaneous 4/	94	44	9
Grand total	2,806	1,161	681

1/ Annual lumber production of 5 million board feet or more.
2/ Annual lumber production of 1.000 to 4.999 million board feet.
3/ Annual lumber production less than 1 million board feet.
4/ Includes excelsior mills, novelty plants, shaving mills, etc.

Primary mills and roundwood product output are concentrated in the Eastern Ozark Region and bordering counties (figs. 1 and 2). Although some counties have no primary mills, every county contributed some industrial roundwood[3] in 1969.

Missouri roundwood production was 123.5 million cubic feet in 1969 – 96 percent hardwoods and 4 percent softwoods (table 2). Of this total, over half was saw logs, one-eighth was charcoal wood, and nearly one-tenth was cooperage logs. Softwood harvesting (primarily saw logs and posts) dropped sharply from 1946 to 1958 (table 3). Since then the softwood harvest has leveled off. Hardwood harvests declined moderately from 1946 to 1969, mainly because the demand for saw logs fell during the first half of this period and use of fuelwood and posts was down during the last half when saw log demand recovered.

Principal species cut are white, red, and black oaks. Other important species cut are hickory, cottonwood, shortleaf pine, sycamore, and walnut (table 4). Although most logging is centered in and adjacent to the Eastern Ozark Region, about half of the walnut is cut in the Northern Prairie Region.

Estimated value of Missouri's 1969 timber harvest was 33.1 million dollars.[4] Saw logs accounted for almost 18 million dollars. Much of this money remains to aid the local economy of rural areas where the logging was done.

Farm and other nonindustrial private landowners are the chief suppliers of wood (table 5). However, National Forests furnished nearly one-third of the softwood saw logs and posts in 1969 and nearly one-tenth of the hardwood saw logs.

SAWMILL INDUSTRY

Missouri cut 368 million board feet of lumber at 549 sawmills in 1969. Nearly half was sawn in the Eastern Ozarks and over one-fifth in the Southwest Ozarks (table 6). Lumber output was greatest in Wayne, Texas, Reynolds, and Howell Counties.

During the last century, lumber production has been the backbone of Missouri's primary timber industry. In 1869 lumber production was 330 million board feet and peaked at 724 million at the turn of the centruy (fig. 3). Even during the depression in the 1930's, lumber output never fell below 140 million board feet. A modern day high (525 million board feet) occurred in 1946, followed by a steep drop to 153 million board feet in 1951 and a moderate recovery since then.

While the Missouri active sawmill population fell more than 2,000 from 1946 to 1969, average annual lumber output per mill climbed from 200 to 670 thousand board feet. During this period, the number of mills sawing 1 million board feet or more annually climbed from 45 to 124, but the number sawing smaller amounts fell markedly. Fifty-two mills cut nearly half of Missouri's lumber in 1969 while over six times as many mills cut only 13 percent (fig. 4).

[3] *Industrial roundwood includes all logs and bolts except fuelwood.*

[4] *F.o.b. mill or local delivery point.*

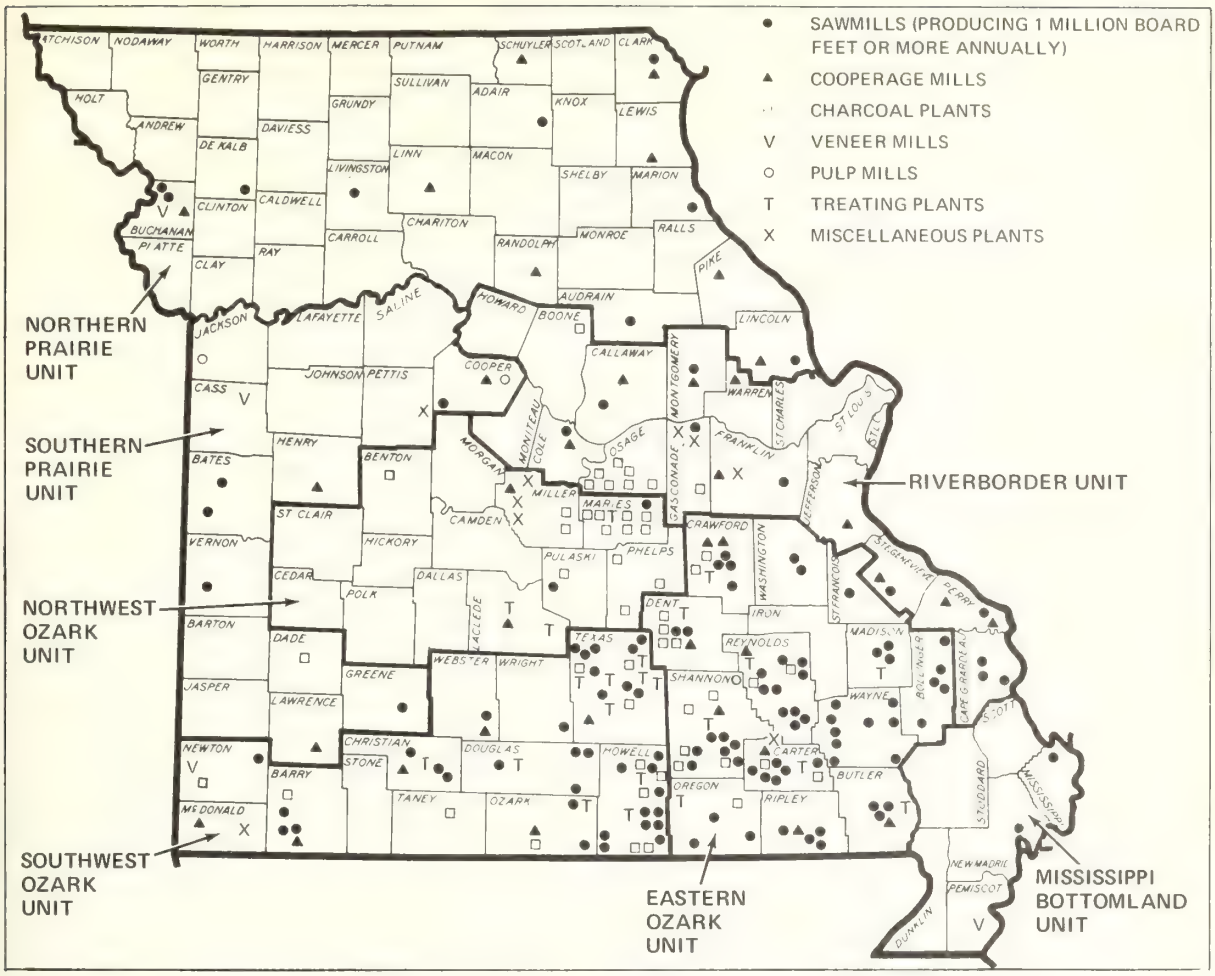

Figure 1. – Primary wood-using plants in Missouri, 1969.

Table 2. – Roundwood production in Missouri, 1969

Product	Standard unit	Thousand standard units: All species	Soft-woods	Hard-woods	Thousand cubic feet: All species	Soft-woods	Hard-woods
Saw logs	Board feet 1/	379,430	18,478	360,952	66,321	3,308	63,013
Cooperage logs	Board feet 1/	53,675	--	53,675	8,845	--	8,845
Veneer logs	Board feet 1/	4,626	—	4,626	1,014	--	1,014
Pulpwood	Standard cords	24	--	24	1,892	--	1,892
Charcoal wood	Standard cords	239	--	239	16,643	--	16,643
Posts	Pieces	4,067	1,519	2,548	2,500	1,152	1,348
Fuelwood	Standard cords	379	2	377	24,453	102	24,351
Poles	Pieces	90	89	1	267	265	2
Mine timbers	Cubic feet	139	--	139	128	--	128
Handle bolts 2/	Board feet 1/	2,543	—	2,543	402	—	402
Miscellaneous 2/	Cubic feet	1,081	338	743	1,081	338	743
Total	Cubic feet	--	--	--	123,546	5,165	118,381

1/ International 1/4-inch rule.
2/ Includes shaving bolts and heading bolts.

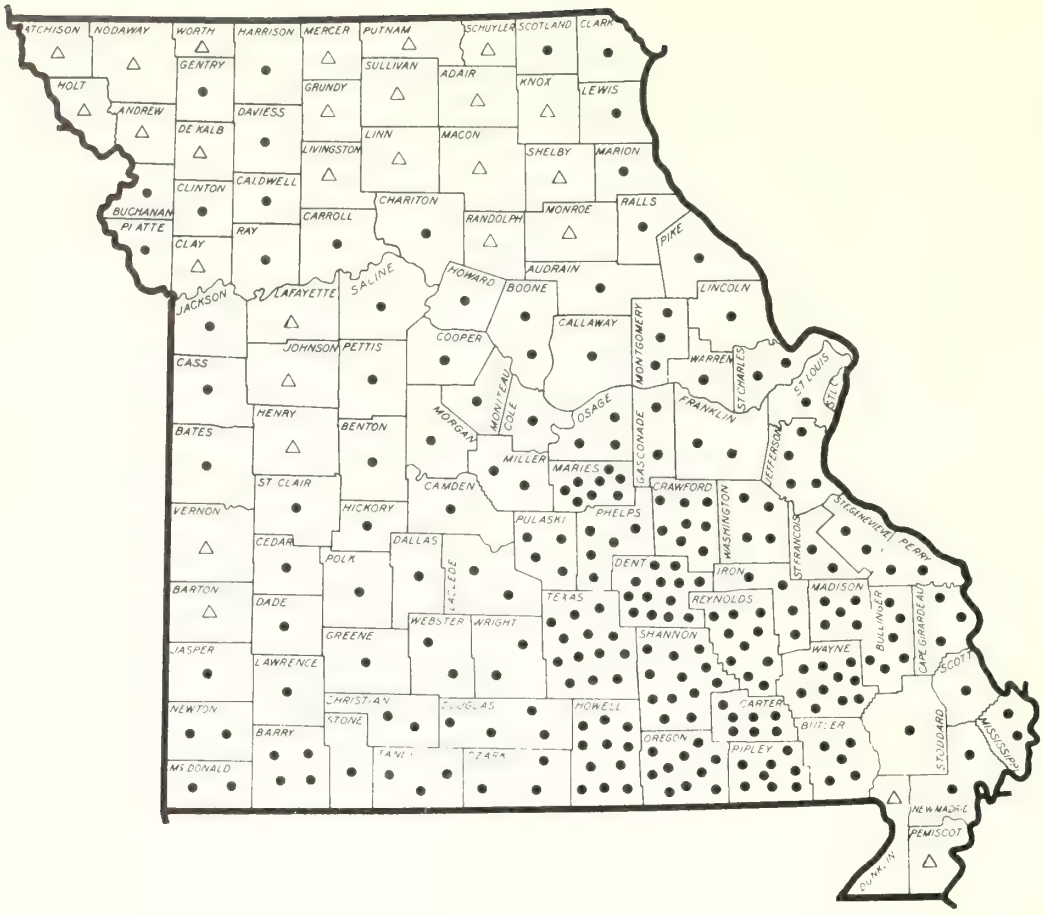

Figure 2. – Output of roundwood products in Missouri counties, 1969. Each dot represents 0.5 million cubic feet. Counties producing less than 0.25 million cubic feet contain a triangle.

Table 3. – Timber products output by product, type of material, and species class in Missouri, 1946, 1958, and 1969
(Million cubic feet)

Product	From roundwood						From plant byproducts					
	Softwoods			Hardwoods			Softwoods			Hardwoods		
	1946	1958	1969	1946	1958	1969	1946	1958	1969	1946	1958	1969
Saw logs	8.3	4.1	3.3	71.1	43.7	63.0	--	--	--	--	--	--
Cooperage logs	--	--	--	14.9	4.5	8.9	--	--	--	—	--	--
Veneer logs	--	--	--	1.4	1.0	1.0	--	--	--	--	--	--
Pulpwood	.1	.1	--	.5	.7	1.9	--	*	--	--	.1	4.4
Charcoal wood	--	--	--	.6	3.2	16.7	--	--	.1	--	--	3.2
Posts	3.2	.8	1.2	7.8	8.8	1.3	--	—	--	--	--	--
Fuelwood	.2	.2	.1	59.2	61.7	24.4	1.4	.7	*	22.3	11.5	2.7
Poles	*	.2	.3	--	--	*	--	--	--	--	--	--
Mine timbers	*	*	--	3.4	.5	.1	--	--	--	--	--	--
Handle bolts	--	--	--	1.3	1.2	.4	--	--	--	--	--	--
Miscellaneous 1/	*	*	.3	2.2	5.7	.7	--	--	.1	--	--	2.0
Total	11.8	5.4	5.2	162.4	131.0	118.4	1.4	.7	.2	22.3	11.6	12.3

*Less than 50 thousand cubic feet.

1/ Includes hewn ties, excelsior bolts, mulch, soil conditioners, shaving wood, heading bolts, etc.

Table 4. – Timber products output from roundwood by product and species in Missouri, 1969

Species	Saw logs	Cooperage logs	Veneer logs	Handle bolts	Pulpwood	Charcoal wood	Poles	Mine timbers	Other products	All products
	M bd. ft.[1]	M bd. ft.[1]	M bd. ft.[1]	M bd. ft.[1]	Cords[2]	Cords[2]	Pieces	M cu. ft.	M cu. ft.[3]	M cu. ft.
Shortleaf pine	15,235	--	--	--	--	--	89,500	--	1,113	4,023
Cypress	187	--	--	--	--	--	--	--	--	35
Eastern redcedar	2,567	--	--	--	--	--	--	--	464	1,009
Other softwoods	489	--	--	--	--	--	--	--	13	98
White oak	66,265	52,389	45	--	2,719	78,137	100	110	17,420	44,000
Red oak	68,345	--	24	--	1,715	18,358	300	7	1,487	15,083
Black oak	116,507	--	--	8	367	109,771	300	--	3,074	31,584
Hickory	15,060	--	1,013	2,229	1,042	28,476	--	5	1,139	6,352
Hard maple	1,670	--	--	--	--	91	--	--	--	276
Soft maple	15,888	57	26	28	3,867	--	--	--	267	3,104
Beech	273	--	--	18	--	--	--	--	--	49
Sweetgum	3,306	672	34	35	--	--	--	--	--	651
Blackgum	2,750	--	--	22	--	302	--	--	--	450
Ash	3,549	57	--	93	220	1,133	--	2	256	960
Cottonwood	24,557	57	488	--	11,104	--	--	--	362	5,134
Basswood	309	--	8	--	--	--	--	--	--	43
Yellow-poplar	958	--	20	--	--	--	--	--	--	154
Black walnut	12,593	--	2,836	--	--	49	--	--	--	3,375
Black cherry	146	--	--	--	--	195	--	--	--	32
Elm	6,123	229	3	77	1,827	1,400	--	--	1,172	2,428
Birch	484	57	--	--	356	--	--	--	2	99
Sycamore	20,190	157	129	21	408	661	--	--	177	3,506
Other hardwoods	1,979	--	--	12	656	--	--	--	1,086	1,439
All species	379,430	53,675	4,626	2,543	24,481	238,593	90,200	128	28,034	123,546

1/ International 1/4-inch rule.
2/ Standard cords, rough wood basis.
3/ Includes posts, fuelwood, shaving bolts, heading bolts, etc.

Average lumber production per mill has been increasing because of newer, more efficient equipment or better mill layout. In addition, most new mills are designed to saw over a million board feet a year, considerably above the average.

Missouri sawmills procured 390 million board feet of logs in 1969, 95 percent from within the State and the remainder from adjacent States and Indiana (table 7). The major imported species from these States were walnut, black oak, soft maple, red oak, and cottonwood. Almost two-thirds of the log receipts from all sources were oak.

During 1969 Missouri loggers harvested 379 million board feet of saw logs, a gain of 21 percent over 1958. Principal cutting shifts included a decline for white oak and shortleaf pine saw logs and gains for red and black oak, soft maple, sycamore, and hickory (table 8). Half of the 1969 saw logs came from the Eastern Ozark Region where each county except one contributed between 5 and 24 million board feet of logs.

One of the fastest growing uses for lumber sawn in Missouri is in pallets (fig. 5). Other important uses of native lumber are for furniture, flooring, boxes and crating, and railroad ties. Specialty high-value uses are in walnut gunstocks and cedar and walnut novelties. Most of this lumber is consumed in the State.

Annual lumber and saw log production in Missouri are likely to continue their moderate advance during the next decade. Furniture and pallet markets will probably expand, and railroad tie markets should remain good. Markets for wooden boxes are apt to be further eroded by substitutes.

COOPERAGE INDUSTRY

Missouri produces one-fourth of the Nation's cooperage logs and bolts, far surpassing any other State. About 54 million board feet were cut in 1969, of which 98 percent was white oak. Two-fifths of this volume came from the Riverborder Region and over one-fourth was from the Eastern Ozarks. All but 3 percent was used at the 36 Missouri cooperage mills. These mills received 57 million board feet of logs in 1969 – 52 million from Missouri, 3 million from Illinois, and 2 million from Iowa. Nine mills in the Riverborder Region consumed over half this volume.

Cooperage mills are more widely dispersed than most other primary wood-using mills. Many are in the Ozarks, but eight are in the lightly forested Northern Prairie Region.

Cooperage log output fell 70 percent between 1946 and 1958. Marginal mills dropped out of production during this period as competition for high quality white oak and labor increased. Eighty-five mills made staves in 1946 compared with 36 in 1958. From 1958 to 1969 the mill population stabilized, but cooperage log production and use nearly doubled as production per mill rose.

Table 5. – Forest products harvested by ownership class, product, and Unit in Missouri, 1969

Ownership class	Saw logs	Cooperage logs	Veneer logs	Pulpwood	Fuelwood	Posts	Miscellaneous pulpwood	Poles	Mine timbers	Handle bolts	Miscellaneous
	M bd. ft.[1]	M bd. ft.[1]	M bd. ft.[1]	cords[2]	cords[2]	M pieces	cords[2]	Pieces	M cu. ft.	M bd. ft.[1]	M cu. ft.
Federal:											
National Forest:											
Softwoods	5,162	--	--	--	--	486	--	650	--	--	--
Hardwoods	34,813	107	35	--	2,738	1	6,751	--	--	--	--
U.S. Army:											
Softwoods	--	--	--	--	--	--	--	--	--	--	--
Hardwoods	475	--	--	--	--	--	--	--	--	--	--
Corps of Engineers:											
Softwoods	--	--	--	--	--	4	--	--	--	--	--
Hardwoods	138	4	--	--	--	--	--	--	--	--	--
State:											
Softwoods	126	--	--	--	--	14	--	--	--	--	--
Hardwoods	1,681	112	--	--	481	--	8	--	--	100	--
Private:											
Industrial:											
Softwoods	585	--	--	--	--	--	--	--	--	--	--
Hardwoods	12,024	1,011	14	--	15,691	--	--	--	--	--	--
Farm and other:											
Softwoods	12,155	--	--	--	--	1,004	1,600	88,850	--	--	338
Hardwoods	312,821	52,441	4,577	24,481	219,573	2,547	370,641	700	128	2,443	743
All owners:											
Softwoods	18,478	--	--	--	--	1,519	1,600	89,500	--	--	338
Hardwoods	365,952	53,675	4,626	24,481	238,593	2,548	377,400	700	128	2,543	743
EASTERN OZARK UNIT											
Federal:											
National Forest:											
Softwoods	5,079	--	--	--	--	411	--	400	--	--	--
Hardwoods	20,982	16	11	--	1,852	--	5,210	--	--	--	--
Corps of Engineers:											
Hardwoods	14	--	--	--	--	--	--	--	--	--	--
State:											
Softwoods	126	--	--	--	--	14	--	--	--	--	--
Hardwoods	1,457	69	--	--	481	--	8	--	--	100	--
Private:											
Industrial:											
Softwoods	228	--	--	--	--	--	--	--	--	--	--
Hardwoods	4,721	137	--	--	15,670	--	--	--	--	--	--
Farm and other:											
Softwoods	5,754	--	--	--	--	407	179	42,800	--	--	--
Hardwoods	148,005	14,430	103	--	94,799	624	84,003	--	73	1,821	72
All owners:											
Softwoods	11,187	--	--	--	--	832	179	43,200	--	--	--
Hardwoods	180,179	14,574	114	--	112,802	624	89,221	--	73	1,921	72
SOUTHWESTERN OZARK UNIT											
Federal:											
National Forest:											
Softwoods	536	--	--	--	--	75	--	50	--	--	--
Hardwoods	10,857	41	--	--	679	--	1,501	--	--	--	--
Corps of Engineers:											
Softwoods	--	--	--	--	--	4	--	--	--	--	--
State:											
Softwoods	--	--	--	--	--	2	--	--	--	--	--
Hardwoods	--	--	--	--	40	--	--	--	--	--	--
Private:											
Industrial:											
Softwoods	357	--	--	--	--	--	--	--	--	--	--
Hardwoods	2,289	12	--	--	11	--	--	--	--	--	--
Farm and other:											
Softwoods	4,756	--	--	--	--	576	503	46,050	--	--	--
Hardwoods	54,641	3,517	--	--	42,006	1,001	82,496	700	--	--	80
All owners:											
Softwoods	5,649	--	--	--	--	657	503	46,100	--	--	--
Hardwoods	67,787	3,570	--	--	42,742	1,001	83,997	700	--	--	80
NORTHWESTERN OZARK UNIT											
Federal:											
National Forest:											
Softwoods	16	--	--	--	--	--	--	300	--	--	--
Hardwoods	2,506	--	36	--	1,452	1	40	--	--	--	--
U.S. Army:											
Hardwoods	475	--	--	--	--	--	--	--	--	--	--
Corps of Engineers:											
Hardwoods	95	--	--	--	--	--	--	--	--	--	--
State:											
Softwoods	--	--	--	--	--	1	--	--	--	--	--
Hardwoods	--	--	--	--	24	--	--	--	--	--	--
Private:											
Industrial:											
Hardwoods	12	--	--	--	10	--	--	--	--	--	--
Farm and other:											
Softwoods	786	--	--	--	--	3	134	--	--	--	338
Hardwoods	17,527	4,558	140	--	57,676	394	71,426	--	10	--	166
All owners:											
Softwoods	802	--	--	--	--	4	134	300	--	--	338
Hardwoods	20,615	4,558	176	--	59,158	395	71,466	--	10	--	166

(Continued on next page)

Table 5 continued

Ownership class	Saw logs	Cooperage logs	Veneer logs	Pulpwood	Charcoal wood	Post	Fuelwood	Poles	Piling	Miscellaneous products
	M bd. ft.[1]	M bd. ft.[1]	M bd. ft.[1]	cords[2]	cords[2]	M pieces	cords[2]	Pieces	M cu. ft.	M bd. ft.[1]	M cu. ft.
OUACHITA UNIT											
Federal:											
Corps of Engineers:											
Softwoods	29	—	-	-	-	--					
Private:											
Industrial:											
Hardwoods	-	864	1		--						
Farm and other:											
Softwoods	11		--		--	-	-	--			
Hardwoods	13,160	601	552	-	1,-	-	32,800	-	-	-	-
All owners:											
Softwoods	11	--	--		-			-			
Hardwoods	13,191	1,465	--	-	1,-	1 -	32,800	-	-	-	-
OZARKS UNIT											
Private:											
Industrial:											
Softwoods	28,124	7,740	2,204	1,-	-	-	-	-	-	-	-
All owners:											
Hardwoods	28,124	7,740	2,204	1,-	-	1	-	-	-	-	-
RIVER BOTTOMLAND UNIT											
Federal:											
National Forest:											
Softwoods	-	—	--	—			—	-	--	-	-
Hardwoods	89	-		-	—	--	—	-	--	-	-
State:											
Softwoods	—	—	-	--	--	8	—	—	-	-	-
Hardwoods	224	43	-	--	40	--	--	--	-	-	-
Private:											
Farm and other:											
Softwoods	650	--	—	--	-	15	784	-	-	-	-
Hardwoods	36,586	21,525	948	3,401	22,473	184	59,016	-	-	-	-
All owners:											
Softwoods	663	--	--	--		23	-	-			
Hardwoods	36,899	21,568	948	3,401	- ,513	184	59,016	—	-	-	-
MISSISSIPPI BOTTOMLAND UNIT											
Private:											
Farm and other:											
Softwoods	166	--	--	--	--			--		—	--
Hardwoods	14,157	190	572	1,71-	-	3	10,300	--	9	165	1
All owners:											
Softwoods	166	--	--	--	--	3	-	--		-	
Hardwoods	14,157	190	572	1,71-	-	3	10,300	--	9	165	1

1/ International 1/4-inch rule.
2/ Standard cords, rough wood basis.

The outlook for this industry is uncertain. Since 1969 cooperage log production has fallen and several mills have closed. All companies, except one, in Missouri are making staves for whiskey barrels. By law, all bourbon whiskey must be aged in new, white oak barrels. Recently the distillers began producing a new product called "light" whiskey that can be aged in used cooperage. Because of the partial change to light whiskeys and the uncertainty of bourbon markets in the future, demand for new barrels has plummeted. There are 3 million or more barrels of light whiskey being aged, the first of which was marketed in 1972. The popularity of light whiskey will help determine the future of the cooperage industry. On the other hand, many Europeans are just becoming acquainted with bourbon. If it suits their taste, bourbon exports would be a boon to the cooperage manufacturer.

During the first 9 months of 1971, U.S. bourbon exports reached 2.6 million proof gallons (more than one-third to West Germany), a gain of 65 percent over the same period 2 years earlier.

CHARCOAL INDUSTRY

Missouri is also the leading charcoal producing State. Annual production is about 125,000 tons as compared to 500,000 tons nationwide (fig. 6). This industry is especially important because it provides an outlet for low-grade hardwoods that have no other market.

A fledgling Missouri industry of three firms in 1946, it grew to 60 plants in 1958, using about five times as much wood. From 1958 to 1969 the annual wood requirements expanded sixfold.

Table 6. – Lumber production by Unit, county,[1] and softwoods and hardwoods in Missouri, 1969
(Thousand board feet)

Unit and county	Soft-woods	Hard-woods	Total	Unit and county	Soft-woods	Hard-woods	Total
Eastern Ozarks:	9,695	167,695	177,390	Northwest Ozarks:	715	11,822	12,537
Bollinger	287	12,848	13,135	Dallas	--	855	855
Butler	989	9,694	10,683	Maries	--	3,659	3,659
Carter	1,040	11,715	12,755	Phelps	--	1,605	1,605
Crawford	10	8,850	8,860	Laclede & Pulaski	--	3,994	3,994
Dent	60	6,873	6,933	All others	715	1,709	2,424
Iron	318	5,946	6,264				
Madison	1,576	10,288	11,864	Southern Prairie:			
Oregon	140	12,006	12,146	All counties	--	12,652	12,652
Reynolds	1,211	22,331	23,542				
Ripley	335	13,641	13,976	Northern Prairie:			
Shannon	1,404	15,027	16,431	All counties	--	25,777	25,777
Wayne	1,005	24,208	25,213				
St. Francis & Washington	1,320	14,268	15,588	River Border:	694	45,548	46,242
				Cape Girardeau	--	6,790	6,790
				Cole, Franklin, & Perry	283	26,971	27,254
Southwest Ozarks:	6,111	77,266	83,377	Callaway, Gasconade, Montgomery & Ste. Genevieve	335	8,390	8,725
Barry	144	7,676	7,820	Howard, St. Charles, & St. Louis	--	3,039	3,039
Christian	--	4,757	4,757	All others	76	358	434
Douglas	795	6,548	7,343				
Howell	795	22,534	23,329				
McDonald	--	1,271	1,271				
Newton	--	2,287	2,287	Mississippi Bottomlands:			
Ozark	375	5,555	5,930	All counties	110	9,850	9,960
Stone	--	230	230				
Taney	1,424	1,389	2,813				
Texas	2,548	21,609	24,157				
Webster	--	1,490	1,490				
Wright	30	1,920	1,950				
Missouri total					17,325	350,610	367,935

1/ Some counties were combined to avoid individual mill disclosures.

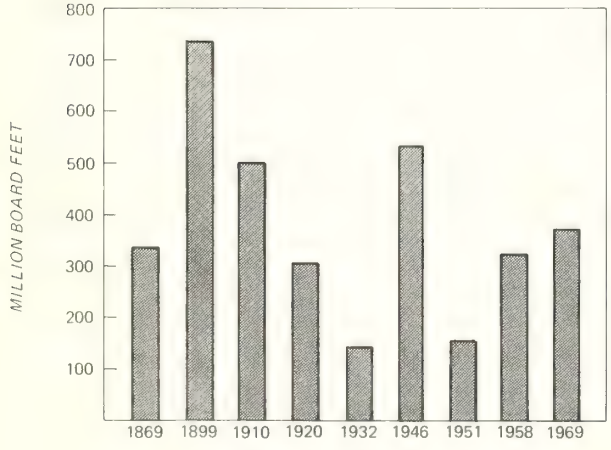

Figure 3. – Lumber production in Missouri for selected years, 1869-1969. (Years selected were those showing peaks or troughs, or general trends toward peaks or troughs.) Sources: Lumber production in the United States 1799-1946. U.S. Dep. Agric. Misc. Public. 669, 1948. Lumber production and mill stocks. U.S. Dep. Com., Bur. Census Annu. Rep. 1951, 1958, and 1969.

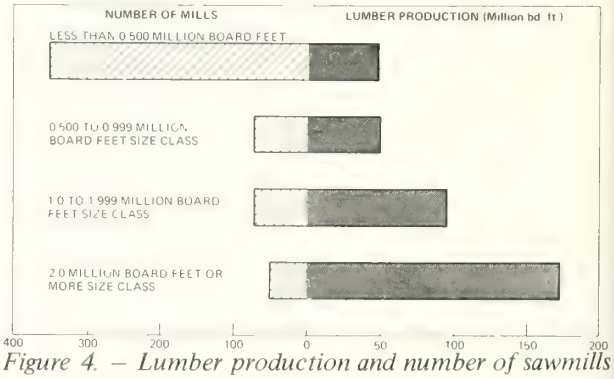

Figure 4. – Lumber production and number of sawmills by annual production size class in Missouri, 1969.

Five Missouri charcoal briquette plants provided a market for the charcoal in 1969. Since then another briquette plant has opened and another has been planned.

Charcoal wood receipts at Missouri's 52 active plants in 1969 totaled 237,000 cords of roundwood: 86 percent oak and 12 percent hickory – the two premier species for charcoal. In addition, about 47,000 cords of

Table 7. – Saw log production, receipts, and movement, Missouri, 1969
(Thousand board feet)[1]

Species	Production									Out-of-State receipts from:						Receipts in Missouri
	Remained in Missouri	Shipped to: Kansas	Illinois	Kentucky	Iowa	Arkansas	Tennessee	Other States	Total	Illinois	Iowa	Arkansas	Kansas	Indiana	Oklahoma	
Shortleaf pine	15,235	--	--	--	-	--	--	--	15,235	--		3	--	--	—	15,238
Cypress	175	--	12	--	--	--	--	--	187	—	-	-	--	--	-	175
Eastern redcedar	2,567	--	--	--	--	--	--	-	2,567	--	—	338	--		--	2,905
Other softwoods	448	--	--	41	--	--	--	--	489	--	—	--	—	—	—	448
White oak	65,811	--	--	143	135	180	3	3	66,265	265	18	727	11	--		66,832
Red oak	67,578	--	--	428	194	133	12	--	68,345	2,045	5	248	427	—	-	70,203
Black oak	116,240	--	15	106	6	140	—	--	116,507	2,677	3	1,161	27		--	120,108
Hickory	14,667	67	32	175	28	83	--	8	15,060	169	—	164	13	—	--	15,013
Hard maple	1,452	206	--	--	12	--	—	—	1,670	80	--	—	—	--	—	1,532
Soft maple	15,327	--	—	123	435	--	3	--	15,888	1,249	1,549	30	25	320		18,500
Beech	273	--	--	—	—	—	--	--	273	267	--	--	—	—	-	540
Sweetgum	2,779	--	135	286	--	66	60	--	3,306	258	—	-	—	—	—	3,037
Blackgum	2,629	--	24	37	--	--	60	--	2,750	86	--	--	—	--		2,715
Ash	3,463	67	—	--	19	--	—	—	3,549	242	48	6	17	19	--	3,815
Cottonwood	22,788	--	1,375	215	131	--	48	--	24,557	1,356	606	--	214	—	—	24,906
Basswood	288	--	--	--	21	--	--	--	309	--	--	--	--	--	—	288
Yellow-poplar	936	--	--	--	--	—	3	19	958	493	--	--	-	-	--	1,451
Black walnut	9,501	2,847	--	--	31	--	-	214	12,593	155	1,490	487	1,411	395	171	13,961
Black cherry	146	--	--	--	--	-	--	--	146	66	--	—	--		-	214
Elm	5,923	68	--	--	93	27	12	--	6,123	73	3	10	46	-	51	6,106
Birch	445	--	--	--	39	--	--	--	484	21	8	--	5		--	479
Sycamore	19,860	59	79	106	31	27	28	—	20,190	483	--	10	30	—	-	20,670
Other hardwoods	1,714	209	—	--	24	27	5	-	1,979	31	29	-	12	13	--	1,990
All species	370,245	3,523	1,672	1,640	1,189	683	234	244	379,430	10,018	3,759	3,184	2,178	747	222	390,578

1/ International 1/4-inch rule.

Table 8. — Saw log harvest changes in Missouri, 1958 and 1969
(Million board feet)

Species	Size of harvest 1958	Size of harvest 1969	Change
Shortleaf pine	24.4	15.2	- 9.2
Cypress	1.3	.2	- 1.1
Redcedar	1.2	2.6	+ 1.4
Other softwoods	--	.5	+ .5
White oak	120.6	66.2	-54.4
Red oak	41.8	68.3	+26.5
Black oak	68.6	116.5	+47.9
Hickory	4.7	15.1	+10.4
Hard maple	1.2	1.7	+ .5
Soft maple	1.9	15.9	+14.0
Sweetgum	1.7	3.3	+ 1.6
Blackgum	2.1	2.7	+ .6
Ash	.5	3.5	+ 3.0
Cottonwood	16.3	24.6	+ 8.3
Yellow-poplar	2.7	1.0	- 1.7
Black walnut	8.7	12.6	+ 3.9
Elm	7.7	6.1	- 1.6
Birch	--	.5	.5
Sycamore	7.8	20.2	+12.4
Other hardwoods	.9	2.7	+ 1.8
Total	314.1	379.4	+65.3

plant residue were received at these plants. Essentially all of the charcoal wood used in Missouri originates in the State.

Loggers cut 238,600 cords of charcoal wood in 1969 in Missouri, shipped less than 1 percent to Arkansas, and delivered the remainder to Missouri plants.

Charcoal production in Missouri should continue to increase but at a slower rate than in the last decade. Any change in the desire for charcoal-broiled food, of course, will have an important effect on charcoal production.

PULPMILL INDUSTRY

Missouri is becoming a more important pulpwood producer. From 1,200 roundwood cords in 1955, production climbed to 81,000 cords in 1969 – two-thirds was plant byproducts,[5] the rest was roundwood.

Round pulpwood output has remained steady since 1964, but the use of Missouri plant byproducts in pulping has been rising. Plant byproducts from Missouri were first used for pulp in 1965, and their use has grown rapidly. Most of these byproducts are shipped to Illinois.

Two pulpmills, with a total capacity of 170 groundwood tons per 24 hours, are operating in Missouri. Both mills began production during the last 25 years; they manufacture fiber-board, roof insulation board, and roofing felt.

A bright future is likely for Missouri pulpwood production. It is one of the last States with a large quantity of untapped hardwood timber, some of which is unsuitable for higher value products. Whole tree chipping in the woods could give a boost to the use of oak with its large

[5] *Plant byproducts are slabs, edgings, veneer cores, sawdust, etc., used for products.*

Figure 5. – Missouri pallet manufacturing is a growth industry, but highly competitive because of ease of entry into pallet production. Pallets such as these are designed to reduce labor and handling costs of merchandise in warehouses and in transit in trucks, trains, and ships. (Photo courtesy of Missouri Conservation Department.)

volume of limbwood relative to many other species. As competition for pulpwood increases in other areas, pulp companies will probably turn to Missouri for additional supplies.

Most of the Ozark Region is not served by pulpwood markets, and forest management improvements are being delayed accordingly.

OTHER TIMBER INDUSTRIES

Veneer Logs and Bolts

Veneer log production dwindled from over 7 million board feet in 1958 to 4.6 million in 1969. However, walnut and pecan hickory production rose during this period. These species constituted over four-fifths of the

Figure 6. – This "Missouri-type charcoal kiln" is most commonly used to pr

1969 veneer log volume cut; in 1958 less than one-fifth was walnut and no hickory was cut. Cottonwood and soft maple were the high-volume container veneer species cut in 1958. During this period markets for Missouri logs shifted from container veneers to face veneers used in furniture, paneling, etc.

Railroads reported 1.2 million board feet of Missouri walnut logs destined for overseas markets in 1969. Shipments were dispersed in all directions because of Missouri's central location and good rail connections to all coasts (including the Great Lakes). Seaports and Great Lakes ports in nine States received Missouri veneer logs, undoubtedly bound mainly for Germany and Japan. Veneer log production may be erratic during the 1970's if other veneer species or nonwood materials are substituted for walnut and pecan veneers in furniture manufacturing, or vice versa. These substitutions will be greatly influenced by changes in consumer tastes and preferences for furniture. Over the near term, furniture markets should rise as family formations increase. This market will provide Missouri loggers a chance to maintain their sales of walnut and pecan logs provided competition from simulated wood grain finishes doesn't become severe.

Posts (Round and Split)

Round and split post production in Missouri was about 4 million pieces in 1969, 75 percent less than in 1958. However, the trend has been toward sawing posts square at several plants as substitutes for round and split posts. An unknown but significant portion of the decline in round posts is undoubtedly due to this substitution of sawn posts.

Miscellaneous

Pole harvesting is rising because more shortleaf pine are becoming pole size. Except for a few hundred oak poles, all round poles in Missouri are pine. Meanwhile, many poles are sawn square on the sides. Perhaps half of the poles manufactured in Missouri are sawn hardwoods.

In 1946 no poles were cut except a few by farmers for their own use. Pole output moved up to 62 thousand round poles by 1958 and to 90 thousand in 1969. Nearly all of these poles and 2.8 million Missouri posts were treated in 1969 at 22 Missouri wood-preserving plants (fig. 7). By 1972, 27 treating plants were operating, and more are expected to start up by 1975.

Figure 7. — These Missouri posts are being loaded into cylinders for pressure preservative treatment. The preservative will give added years of usefulness to the posts. (Photo courtesy of Missouri Conservation Department.)

Mine timber use in 1969 was 128 thousand cubic feet, only one-fifth the volume used in 1958. Mine timber use per ton of coal or ore mined has been dropping and some mines have closed. Coal-mining companies need most of the timbers, and white oak is the favorite species. Small quantities of timbers are needed in iron and lead-zinc mines.

Handle bolt output shrank in 1969 to about one-third of the 1958 production. Hickory, used for striking tools such as axes, hammers, and railroad picks, is the preferred species.

Other minor products currently harvested are shaving bolts and heading bolts. Shavings are used for pet bedding and by meat processors in curing and smoking operations; heading bolts are used for manufacturing barrel headings. Miscellaneous plant byproducts uses include soil conditioners, mulch, and animal bedding.

PRIMARY PLANT RESIDUE

Sixty percent (18.8 million cubic feet) of the 1969 Missouri primary plant residue was not used (table 9). Of the unused portion, 7.9 million cubic feet (or 100,000 cords) was coarse residue suitable for chipping. Nearly half of the unused volume was in the Eastern Ozark Region, including 4.1 million of coarse residue; more than one-fifth was in the Southwest Ozark Region.

Companies requiring more pulpwood or charcoal wood should consider the large quantity of coarse plant residue available at sawmills in these two regions as a potential supply source. This supply included 52,500 cords in the Eastern Ozarks and 23,500 cords in the Southwest Ozarks.

Farmers, nurseries, and companies supplying farmers, nurseries, gardeners, and landscapers should consider using the 9.4 million cubic feet of unused fine residue (primarily sawdust and shavings) in the Eastern and Southwest Ozarks and the Riverborder Region. Such material is useful for livestock and pet bedding, mulch, soil conditioners, and poultry litter.

Table 9. – Volume of primary plant residue by kind of material, type of use, and Unit of origin in Missouri, 1969
(Thousand cubic feet)

ALL UNITS

Source industry and kind of residue	Volume by type of use								
	Fiber[1]	Charcoal		Fuel[2]		Other[3]		Not used[4]	
	Hard-woods	Soft-woods	Hard-woods	Soft-woods	Hard-woods	Soft-woods	Hard-woods	Soft-woods	Hard-woods
Lumber:									
Coarse	3,252	99	2,944	25	1,355	59	18	548	6,922
Fine	250	--	--	3	406	78	1,264	426	8,112
Total	3,502	99	2,944	28	1,761	137	1,282	974	15,034
All other:									
Coarse	726	--	183	--	758	--	57	--	463
Fine	206	--	42	--	201	--	706	--	2,348
Total	932	--	225	--	959	--	763	--	2,811
All industries:									
Coarse	3,978	99	3,127	25	2,113	59	75	548	7,385
Fine	456	--	42	3	607	78	1,970	426	10,460
Total	4,434	99	3,169	28	2,720	137	2,045	974	17,845
EASTERN OZARK UNIT									
Lumber:									
Coarse	971	44	1,532	6	392	1	5	323	3,755
Fine	86	--	--	1	13	3	97	273	4,404
Total	1,057	44	1,532	7	405	4	102	596	8,159
All other:									
Coarse	63	--	120	--	144	--	--	--	70
Fine	--	--	42	--	83	--	18	--	445
Total	63	--	162	--	227	--	18	--	515
All industries:									
Coarse	1,034	44	1,652	6	536	1	5	323	3,825
Fine	86	--	42	1	96	3	115	273	4,849
Total	1,120	44	1,694	7	632	4	120	596	8,674
SOUTHWEST OZARK UNIT									
Lumber:									
Coarse	158	54	1,147	17	427	26	--	208	1,605
Fine	--	--	--	--	99	32	247	147	1,957
Total	158	54	1,147	17	526	58	247	355	3,562
All other:									
Coarse	--	--	42	--	54	--	--	--	40
Fine	--	--	--	--	--	--	76	--	144
Total	--	--	42	--	54	--	76	--	184
All industries:									
Coarse	158	54	1,189	17	481	26	--	208	1,645
Fine	--	--	--	--	99	32	323	147	2,101
Total	158	54	1,189	17	580	58	323	355	3,746

See footnotes on page 15

Table continued on next page

Table 9 continued

Species	Volume by type of use								
	Fiber[1]		Charcoal		Fuel[2]		Other[3]		Not used[4]
	Hard-woods	Soft-woods	Hard-woods	Soft-woods	Hard-woods	Soft-woods	Hard-woods	Soft-woods	Hard-woods
NORTHWEST OZARK UNIT									
Lumber:									
Coarse	22	--	246	--	141	30	--	3	73
Fine	--	--	--	--	13	18	84	2	235
Total	22	--	246	--	154	48	84	5	308
All other:									
Coarse	79	--	--	--	4	--	--	--	--
Fine	--	--	--	--	33	--	33	--	72
Total	79	--	--	--	37	--	33	--	72
All industries:									
Coarse	101	--	246	--	145	30	--	3	73
Fine	--	--	--	--	46	18	117	2	307
Total	101	--	246	--	191	48	117	5	380
SOUTHERN PRAIRIE UNIT									
Lumber:									
Coarse	--	--	13	--	62	--	3	1	427
Fine	--	--	--	--	12	--	176	--	161
Total	--	--	13	--	74	--	179	1	588
All other:									
Coarse	--	--	--	--	5	--	3	--	73
Fine	--	--	--	--	2	--	38	--	90
Total	--	--	--	--	7	--	41	--	163
All industries:									
Coarse	--	--	13	--	67	--	6	1	500
Fine	--	--	--	--	14	--	214	--	251
Total	--	--	13	--	81	--	220	1	751
NORTHERN PRAIRIE UNIT									
Lumber:									
Coarse	604	--	--	--	68	--	--	--	518
Fine	164	--	--	--	2	--	185	--	474
Total	768	--	--	--	70	--	185	--	992
All other:									
Coarse	105	--	--	--	36	--	54	--	183
Fine	--	--	--	--	74	--	159	--	385
Total	105	--	--	--	110	--	213	--	568
All industries:									
Coarse	709	--	--	--	104	--	54	--	701
Fine	164	--	--	--	76	--	344	--	859
Total	873	--	--	--	180	--	398	—	1,560

See footnotes on page 15

Table continued on next page

Table 9 continued

Species	Volume by type of use								
	Fiber[1]	Charcoal		Fuel[2]		Other[3]		Not used[4]	
	Hard-woods	Soft-woods	Hard-woods	Soft-woods	Hard-woods	Soft-woods	Hard-woods	Soft-woods	Hard-woods
RIVER BORDER UNIT									
Lumber:									
Coarse	1,332	1	6	2	59	2	10	13	513
Fine	--	--	--	2	95	25	475	1	773
Total	1,332	1	6	4	154	27	485	14	1,286
All other:									
Coarse	350	--	21	--	504	--	--	--	97
Fine	--	--	--	--	--	--	382	--	1,212
Total	350	--	21	--	504	--	382	--	1,309
All industries:									
Coarse	1,682	1	27	2	563	2	10	13	610
Fine	--	--	--	2	95	25	857	1	1,985
Total	1,682	1	27	4	658	27	867	14	2,595
MISSISSIPPI BOTTOMLANDS UNIT									
Lumber:									
Coarse	165	--	--	--	206	--	--	--	31
Fine	--	--	--	--	172	--	--	3	108
Total	165	--	--	--	378	--	--	3	139
All other:									
Coarse	129	--	--	--	11	--	--	--	--
Fine	206	--	--	--	9	--	--	--	--
Total	335	--	--	--	20	--	--	--	--
All industries:									
Coarse	294	--	--	--	217	--	--	--	31
Fine	206	--	--	--	181	--	--	3	108
Total	500	--	--	--	398	--	--	3	139

1/ For manufacture of pulp, hardboard, or roofing felt.
2/ All residue used for industrial or domestic fuel whether sold or given away.
3/ Includes uses such as livestock bedding, mulch, small dimension, and specialty items.
4/ Includes residue burned as waste.

Detailed supplementary county tables of 1969 Missouri timber products output are available without charge on request. These tables show separately the quantity of saw logs, veneer logs, cooperage logs, charcoal wood, and all other products harvested in 1969, by species and county. The tables may be useful to readers wishing to analyze timber harvests for various species in different county groupings. Address your request to:

Information Services
North Central Forest Experiment Station
Folwell Avenue
St. Paul, Minnesota 55101

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OTHER RESOURCE BULLETINS OF THE NORTH CENTRAL FOREST EXPERIMENT STATION

The Growing Timber Resource of Michigan, 1966, by Clarence D. Chase, Ray E. Pfeifer, and John S. Spencer, Jr. USDA For. Serv. Resour. Bull. NC-9, 62 p., illus. 1970.

Veneer-Log Production and Receipts, North Central Region, 1968, by Thomas P. Ginnaty, Jr. USDA For. Serv. Resour. Bull. NC-10, 8 p., illus. 1970.

Pulpwood Production in the North Central Region By County, 1969, by James E. Blyth. USDA For. Serv. Resour. Bull. NC-11, 23 p., illus. 1970.

Primary Forest Products Industry & Industrial Roundwood Production, Michigan, 1969, by James E. Blyth and Allen H. Boelter. USDA For. Serv. Resour. Bull. NC-12, 12 p., illus. 1971.

Pulpwood Production in the North Central Region By County, 1970, by James E. Blyth. USDA For. Serv. Resour. Bull. NC-13, 22 p., illus. 1971.

Veneer-Log Production and Receipts, North Central Region, 1970, by Thomas P. Ginnaty, Jr. USDA For. Serv. Resour. Bull. NC-14, 8 p., illus. 1972.

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1973

PULPWOOD PRODUCTION

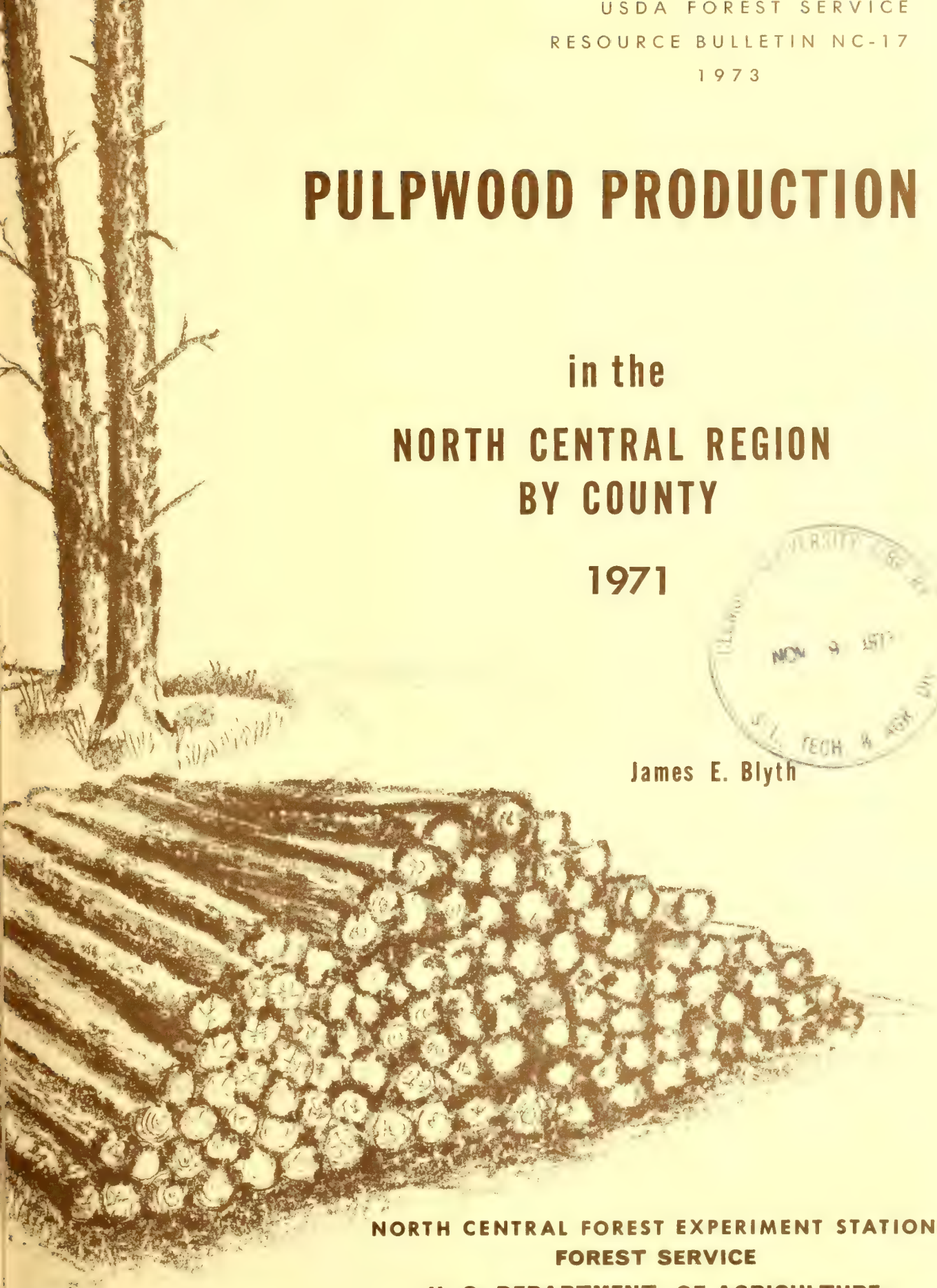
in the

NORTH CENTRAL REGION BY COUNTY

1971

NOV 9 1973
TECH & AGR DIV

James E. Blyth



NORTH CENTRAL FOREST EXPERIMENT STATION
FOREST SERVICE
U. S. DEPARTMENT OF AGRICULTURE

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(Maintained in cooperation with the University of Minnesota)

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PULPWOOD PRODUCTION IN THE NORTH CENTRAL REGION, BY COUNTY, 1971

James E. Blyth

This is the 13th annual report on the pulpwood harvest in Lake States counties and the 12th annual report on the Central States harvest. The Lake States (Michigan, Minnesota, and Wisconsin) and Central States (Illinois, Indiana, Iowa, and Missouri) are discussed separately because the timber types in each area are different and less information can be released about the Central States — more detailed data published on pulpwood production and receipts in the Central States would reveal the operations of individual mills.

Pulpmills using North Central States timber in 1971 reported their pulpwood receipts by State and county. Their cooperation is gratefully acknowledged. Thanks are also due to Ray Pfeifer, Staff Forester, Forest Resource Development, Michigan Department of Natural Resources, for collecting data on the Michigan pulpmills, and to Jerold Hahn and Berghild Berntsen for data computations.

LAKE STATES

While national wood pulp production rose 3.6 percent in 1971, Lake States pulpwood production fell more than one-quarter million cords. A major reason for this decline was a reduction of pulpwood inventories in the Lake States of almost 100,000 cords.

Production Near 4 Million Cords

Of the 4,015,000 cords of Lake States pulpwood produced[1] in 1971, all but 1 percent was consumed in these States. More than 9 out of 10 cords was roundwood (including chips from roundwood); the remainder was residue[2] from local wood-using plants. Roundwood output declined 6 percent, and Lake States residue used for pulping dropped 11 percent. More than 8 out of 10 cords of Lake States residue delivered to pulpmills were in chip form; about 5 out of 6 cords were hardwood.

Harvests of all reported species groups declined, although the drop was minimal for pine. Aspen production fell 76,000 cords while the hemlock harvest hit a modern-day low.

Nearly one-fifth of the roundwood was peeled before delivery, primarily aspen. Thirty-seven percent of the aspen was peeled: 59 percent in Wisconsin, 32 percent in Michigan, and 14 percent in Minnesota (fig. 1).

1971 Pulpwood Production by State

Wisconsin produced 39 percent of the Lake States pulpwood, Michigan 31 percent, and Minnesota 30 percent.

The distribution of the harvest is shown in two ways: first, the amount of pulpwood cut relative to commercial forest area (fig. 2), and second, the amount of pulpwood cut relative to the merchantable volume in major pulpwood species (fig. 3).

[1] *Pulpwood production is defined as the pulpwood volume from timber lands in a specified area that was received at all mills during 1971, whereas pulpwood receipts are defined as the volume of wood received by mills in a specified area regardless of the geographic source.*

[2] *Residue is the byproduct from sawmills, veneer mills, cooperage mills, and other wood-using plants that is used for pulping. Residue includes slabs, edgings, veneer cores, sawdust, wood flour, and chips manufactured from these byproducts.*

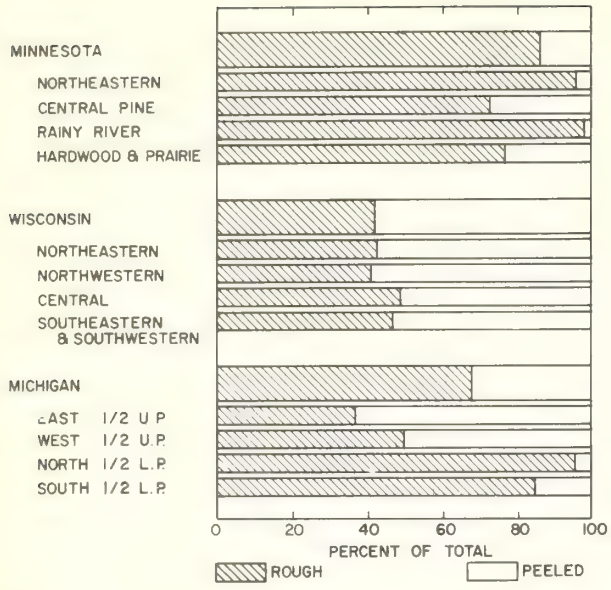


Figure 1. — *Percent of rough and peeled aspen roundwood production by State and Forest Survey Unit, 1971.*

Five Minnesota counties, 18 in Wisconsin, and 11 in Michigan, each contributed more than 100 cords of pulpwood per 1,000 acres of stocked commercial forest land. Heaviest cutting per 1,000 cords of merchantable volume in principal pulpwood species occurred in northeast and central Wisconsin.

Wisconsin production slips 6 percent. — Most of the decline occurred in aspen, birch, and other hardwoods. One-fourth of the decline in volume cut occurred in Lincoln County. Top-producing counties were Oneida, Douglas, and Marinette.

Michigan output tumbles 139,000 cords. — Volume of pulpwood cut was lower for every species group except miscellaneous hardwoods. Pulpwood logging declined most noticeably in northern Lower Michigan. Menominee, Iron, and Dickinson County loggers cut the largest pulpwood volumes.

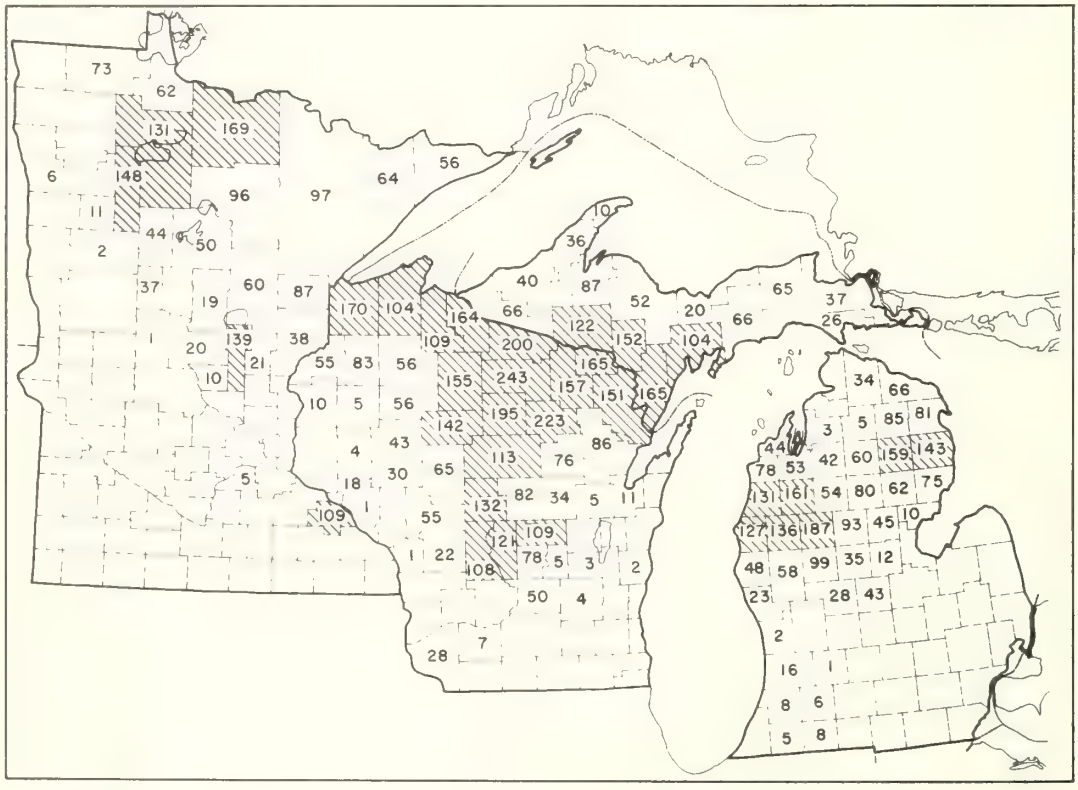


Figure 2. — *Cords of pulpwood cut per 1,000 acres of stocked commercial forest land in principal pulpwood-producing counties, 1971. Crosshatching shows counties that supplied 100 or more cords of pulpwood per 1,000 acres of stocked commercial forest land.*

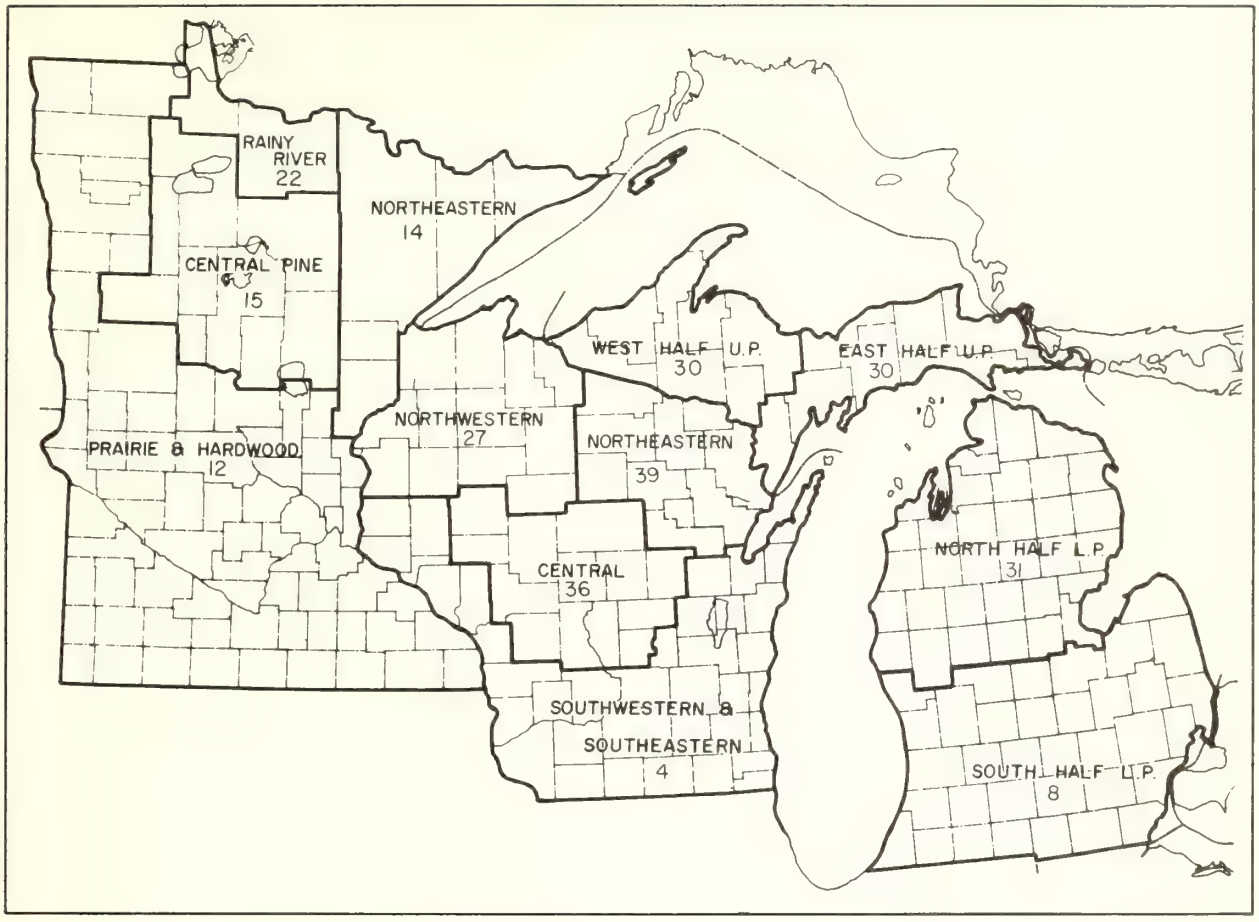


Figure 3. — *Cords of pulpwood bolts and logs harvested per 1,000 cords of merchantable volume in principal pulpwood species by Forest Survey Unit, 1971. The heavy lines delineate the boundaries of the Forest Survey Units in each State.*

Minnesota production falls slightly. — Aspen, pine, and spruce constituted 83 percent of the Minnesota pulpwood output. Four large counties — St. Louis, Koochiching, Itasca, and Beltrami — provided two-thirds of the harvest.

Receipts Fall 339,000 Cords

Forty-three Lake States plants received 4.3 million cords of pulpwood in 1971. Of these plants, 38 used aspen, 22 used spruce, and 19 used balsam fir (table 1). More plants are now accepting birch and tamarack in their species mix. Eleven plants used some birch and seven used some tamarack, a gain of three over the number using these species in 1970.

Receipts of every species group were lower in 1971 than in 1970. Spruce and hemlock receipts were the lowest in a quarter century. On the other hand, softwood residue procurement increased for the sixth straight year.

Table 1. — *Number of plants using the different species of wood for pulping in 1971*

Species and kind of material	Lake States	Minnesota	Wisconsin	Michigan
Aspen	38	9	22	7
Balsam fir	19	5	10	4
Birch	11	1	6	4
Hemlock	8	--	6	2
Pine	12	3	5	4
Spruce	22	5	12	5
Tamarack	7	2	4	1
Miscellaneous hardwoods	16	2	8	6
Wood chips	12	2	6	4
Slabwood and other residue	7	1	4	2
Total plants	43	9	25	9

Net imports from other States and Canada were 329,000 cords (table 2). Other States furnished 2 out of 3 imported cords; Canada shipped the remainder.

Table 2. — *Pulpwood exports and imports for the Lake States, 1971*
(Thousand standard cords, unpeeled)

Species	Exports	Imports	Net exports or (imports)
Aspen	1	4	3
Birch	--	*	(*)
Balsam fir	*	--	*
Pine	1	67	(66)
Spruce	13	89	(76)
Mixed hardwoods	5	7	(2)
Residues, softwood	16	191	(175)
Residues, hardwood	7	14	(7)
Total	43	372	(329)

*Less than 500 cords.

Five western States — Colorado, Idaho, Montana, South Dakota, and Wyoming — each supplied more than 20,000 cords of softwood pulpwood to Lake States mills. Three-fourths of this western wood was residue delivered as chips.

Softwood roundwood imports from Canada continued to decline rapidly; less than 100,000 cords were imported in 1971, of which nine-tenths were spruce. By contrast, from 1956 to 1965, the average annual volume of round softwood purchased from Canada was more than three times as much. Since 1969, no Canadian balsam fir has been procured, and pine is now a minor import.

Receipts at Minnesota mills remained steady. Only 7 percent of their wood requirements came from out of State.

Wisconsin mills procured 239,000 fewer cords than in 1970. Receipts of birch were off 35 percent, hemlock 30 percent, and balsam fir and spruce each 20 percent. Wisconsin received all of the wood imported from western States and over two-thirds of the Canadian wood.

Pulpwood purchases in Michigan fell to the lowest level since 1962; all but 2 percent came from within the State. Aspen, miscellaneous hardwoods, and pine roundwood met more than four-fifths of Michigan's pulpwood requirements.

Regional Mill Capacity Stable in 1971

During 1971, Lake States mill capacity was about 9,500 tons per day (table 3). Although pulpmill capacity in the Lake States is expected to rise during the next 3 years, several mills may close or change ownership. At least one mill was sold in 1972, and at least two other owners are seeking buyers for their plants.

CENTRAL STATES

Central States pulpwood production climbed for the fourth straight year. As in 1970, rising pulpwood exports to new and expanding mills in adjacent States is the major reason for the production increase. Hardwood residue now equals hardwood roundwood in importance as a component of pulpwood output (table 4).

Demand for Hardwood Residue Boosts Production to 421,000 Cords

Production of roundwood in the Central States has leveled off in recent years, but the demand for more hardwood residue from this area for pulping has risen steeply. Since 1965, the first year Central States residue was pulped in sizable quantities, annual round hardwood production has ranged from 183,000 to 226,000 cords. Meanwhile, Central States hardwood residue delivered to pulpmills spurted from 26,000 cords in 1965 to 202,000 cords in 1971.

Pulpwood markets for this hardwood residue are likely to continue expanding. Large quantities of sawmill residue in Missouri are not being used and could be a valuable pulpwood supply source.

Until 1969, pulpwood demand by mills outside the Central States was a minor influence on production. In 1971, nearly one-third of the Central States pulpwood was exported, predominantly hardwood residue chips. Kentucky mills received most of this wood, with the remainder shipped to Michigan, Ohio, Minnesota, Tennessee, and Louisiana. Export markets are important to pulpwood producers in every State except Iowa (table 5).

Missouri and Illinois produced more pulpwood in 1971 than in any other year. Over the last 3 years the annual compound rate of increase in Missouri output has been 16 percent. In Illinois, production

Table 3. — *Active woodpulp mills in the Lake States, by location, type of pulp produced, and capacity, 1971*

Company	Location	Mill capacity in tons per 24 hours[1]				
		Total	Sulfite	Sulfate	Groundwood and other mechanical	Semi-chemical
Minnesota:						
Blandin Paper Co.	Grand Rapids	205	--	--	205	--
Hennepin Paper Co.	Little Falls	75	--	--	75	--
Boise Cascade Corp.	International Falls	770	--	320	450	--
Northwest Paper Co., The	Cloquet	425	120	305	--	--
Nu-Ply Corp.	Bemidji	90	--	--	90	--
St. Regis Paper Co.	Sartell	115	--	--	115	--
Superwood Corp.	Duluth	240	--	--	240	--
Hoerner Waldorf Corp.	St. Paul	300	--	--	--	300
Conwed Corp.	Cloquet	350	--	--	350	--
Total	9 plants	2,570	120	625	1,525	300
Wisconsin:						
American Can Co.	Green Bay	210	150	--	60	--
American Can Co.	Rothschild	200	200	--	--	--
Badger Paper Mills, Inc.	Peshtigo	90	90	--	--	--
Appleton Papers, Inc.	Combined Locks	175	--	--	175	--
Consolidated Papers, Inc.	Appleton	180	180	--	--	--
Consolidated Papers, Inc.	Stevens Point	100	--	--	100	--
Consolidated Papers, Inc.	Wisconsin Rapids	600	--	360	240	--
Green Bay Packaging, Inc.	Green Bay	200	--	--	--	200
Kansas City Star Co.	Park Falls	115	115	--	--	--
Kimberly-Clark Corp.	Kimberly	150	--	--	150	--
Kimberly-Clark Corp.	Niagara	150	--	--	150	--
Mosinee Paper Mills Co.	Mosinee	200	--	200	--	--
Nekoosa-Edwards Paper Co.	Nekoosa	310	--	310	--	--
Nekoosa-Edwards Paper Co.	Port Edwards	215	215	--	--	--
Owens-Illinois	Tomahawk	615	--	--	--	615
Charmin Paper Products Co.	Green Bay	[2]	[2]	--	[2]	--
Scott Paper Co.	Marinette	50	50	--	--	--
Scott Paper Co.	Oconto Falls	110	110	--	--	--
St. Regis Paper Co.	Rhinelander	120	120	--	--	--
St. Regis Paper Co.	Cornell	50	--	--	50	--
Superior Fiber Products Co.	Superior	180	--	--	180	--
Thilmany Pulp & Paper Co.	Kaukauna	375	--	375	--	--
Tomahawk Pulp Co., Inc.	Tomahawk	50	--	--	50	--
Wausau Paper Mills Co.	Brokaw	145	145	--	--	--
Evans Products Co.	Phillips	80	--	--	80	--
Total	25 plants	4,670	1,375	1,245	1,235	815
Michigan:						
Abitibi Corp.	Alpena	430	--	--	430	--
Celotex Corp.	L'Anse	270	--	--	270	--
Hoerner Waldorf Corp.	Ontonagon	220	--	--	--	220
Manistique Pulp & Paper Co.	Manistique	90	--	--	90	--
Mead Corp., The	Escanaba	150	--	--	150	--
Menasha Corp.	Otsego	225	--	--	--	225
Packaging Corp. of America.	Filer City	600	--	200	--	400
Scott Paper Co.	Menominee	20	--	--	20	--
Warren Co., S.D.	Muskegon	240	--	240	--	--
Total	9 plants	2,245	--	440	960	845
All States	43 plants	9,485	1,495	2,310	3,720	1,960

1/ Lockwood's Directory of the Paper and Allied Industries, 1971-1972, and 1972 Directory of the Forest Products Industry.

2/ Capacity not available.

Table 4. — *Central States pulpwood production and receipts, by State, 1971*
(In standard cords, unpeeled)[1]

Species group and destination	Production[2]					Imports			Total receipts
	Illinois	Indiana	Iowa	Missouri	Region	Lake States	Other U.S.	Total imports	
Softwoods									
Illinois	400	--	--	--	400	--	--	--	400
Ind., Iowa, Mo.[3]	200	--	40	--	240	40	200	240	480
Exported[4]	1,180	--	--	882	2,062	--	--	--	--
Total	1,780	--	40	882	2,702	40	200	240	880
Soft hardwoods[5]									
Illinois	26,450	8,103	--	2,435	36,988	--	--	--	36,988
Ind., Iowa, Mo.[3]	4,720	15,870	14,843	15,583	51,016	1,777	--	1,777	52,793
Exported[4]	549	6,679	--	1,223	8,451	--	--	--	--
Total	31,719	30,652	14,843	19,241	96,455	1,777	--	1,777	89,781
Hard hardwoods[5]									
Illinois	16,105	3,142	--	856	20,103	--	--	--	20,103
Ind., Iowa, Mo.[3]	5,209	15,792	22,976	3,563	47,540	3,160	2,872	6,032	53,572
Exported[4]	5,551	18,608	--	14,577	38,736	--	--	--	--
Total	26,865	37,542	22,976	18,996	106,379	3,160	2,872	6,032	73,675
Total roundwood									
Illinois	42,955	11,245	--	3,291	57,491	--	--	--	57,491
Ind., Iowa, Mo.[3]	10,129	31,662	37,859	19,146	98,796	4,977	3,072	8,049	106,845
Exported[4]	7,280	25,287	--	16,682	49,249	--	--	--	--
Total	60,364	68,194	37,859	39,119	205,536	4,977	3,072	8,049	164,336
Residues, softwood									
Illinois	5,496	--	7,908	280	13,684	14,761	5,379	20,140	33,824
Ind., Iowa, Mo.[3]	--	--	--	--	--	--	3,752	3,752	3,752
Exported[4]	--	432	--	--	432	--	--	--	--
Total	5,496	432	7,908	280	14,116	14,761	9,131	23,892	37,576
Residues, hardwood									
Illinois	29,765	--	--	35,576	65,341	4,690	3,336	8,026	73,367
Ind., Iowa, Mo.[3]	11,317	33,986	5,783	3,640	54,726	2,500	5,504	8,004	62,730
Exported[4]	26,416	35,954	987	18,519	81,876	--	--	--	--
Total	67,498	69,940	6,770	57,735	201,943	7,190	8,840	16,030	136,097
All wood material									
Illinois	78,216	11,245	7,908	39,147	136,516	19,451	8,715	28,166	164,682
Ind., Iowa, Mo.[3]	21,446	65,648	43,642	22,786	153,522	7,477	12,328	19,805	173,327
Exported[4]	33,696	61,673	987	35,201	131,557	--	--	--	--
Total	133,358	138,566	52,537	97,134	421,595	26,928	21,043	47,971	338,009

1/ Factors used in converting to standard green cords (128 cu. ft.) were: 4,500 pounds of soft hardwood roundwood; 5,000 pounds of hard hardwood or coniferous roundwood; 4,100 pounds of softwood chips (green); 4,400 pounds of hardwood chips (green); 2,500 pounds of chips (all species, dry).

2/ Vertical columns of figures under box heading "Production" present the amount of pulpwood cut in each State.

3/ Combined to prevent disclosure of individual mill receipts.

4/ Pulpwood shipped to mills outside the region.

5/ Soft hardwoods include species such as elm, basswood, soft maple, yellow-poplar, and cottonwood. Hard hardwoods include oak, hard maple, beech, and hickory.

Table 5. — *Central States pulpwood production by State and destination, 1967-1971*
(Thousand cords)

Year	Illinois			Indiana			Iowa			Missouri		
		Destination			Destination			Destination			Destination	
	Total	Central States	Other States	Total	Central States	Other States	Total	Central States	Other States	Total	Central States	Other States
1967	96	96	*	84	77	7	35	35	*	37	37	--
1968	115	115	--	118	102	16	38	37	1	62	62	*
1969	132	128	4	132	107	25	31	30	1	81	71	10
1970	118	110	8	148	95	53	58	57	1	82	57	25
1971	133	99	34	139	77	62	53	52	1	97	62	35

*Less than 500 cords.

has been relatively stable for 4 years. Compared with 1970, 1971 production in Indiana and Iowa fell slightly.

Loggers cut pulpwood in 121 counties: 40 in Illinois, 34 in Indiana, 31 in Missouri, and 16 in Iowa (fig. 4). Procurement patterns were similar to those

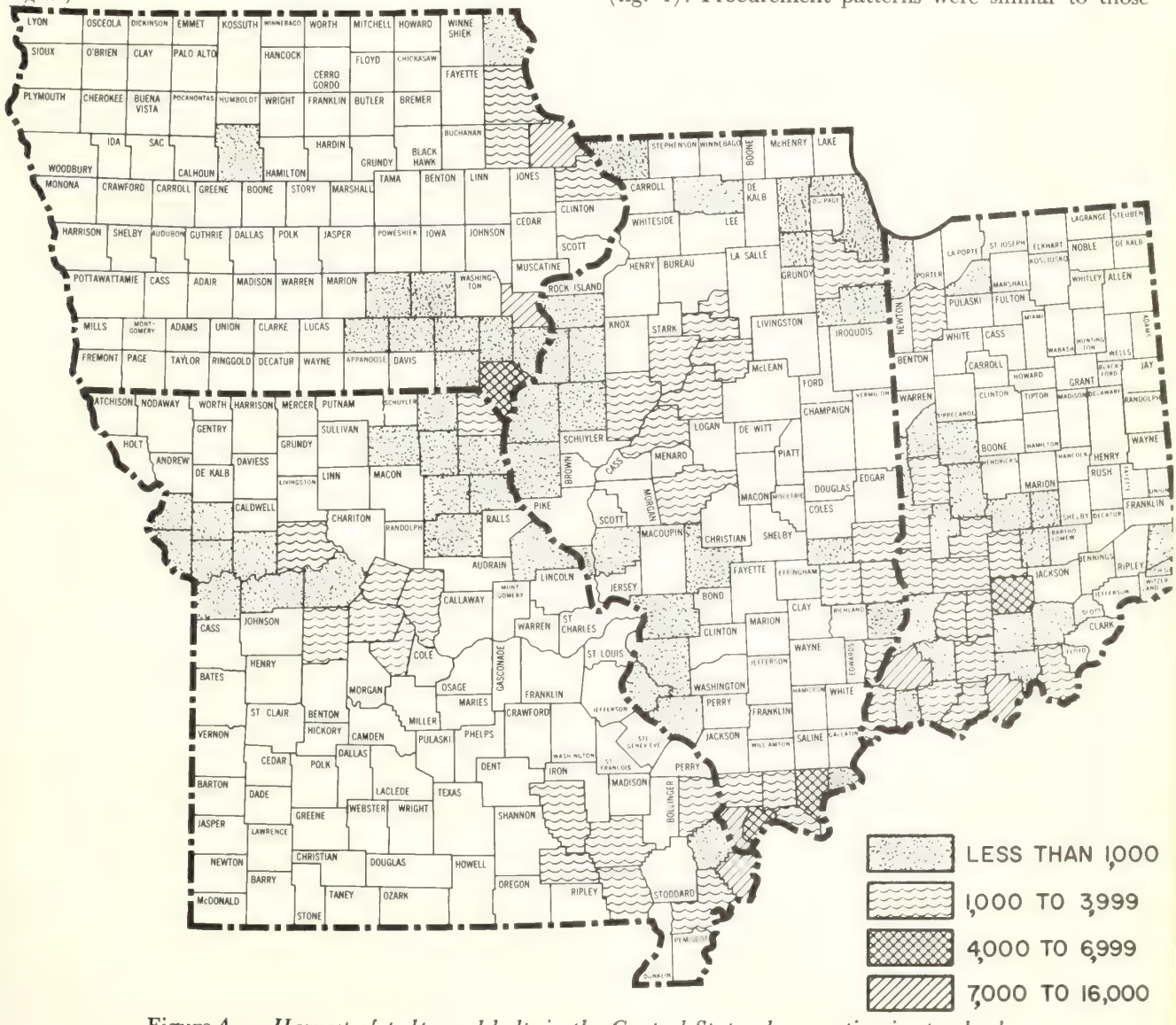


Figure 4. — *Harvest of pulpwood bolts in the Central States, by counties, in standard cords, 1971.*

in 1970 for all States except Indiana. Southeastern Indiana supplied minimal quantities of pulpwood in 1971, but significant amounts in 1970.

Receipts Down Six Percent

Fourteen Central States plants procured 338,000 cords in 1971 (table 6). While total receipts fell, demand for softwood residue rose to 37,000 cords, of which almost two-thirds was imported. Hard hardwood receipts dropped more than 20,000 cords; demand changes were minor for other species groups. Imports satisfied 14 percent of the wood requirements at Central States plants, more than half coming from the Lake States.

Pulping capacity was about 1,500 tons per day (table 7). No major expansions were announced by the resident mills. Expansions and expected increases in percent of capacity used at mills in adjacent States may provide additional marketing opportunities for Central States loggers and primary wood-using plant operators.

Table 6. — *Trends in receipts of roundwood and residue as pulpwood, Central States, 1967-1971*
(Thousand standard cords, unpeeled)

Type of material and area	1967	1968	1969	1970	1971
Roundwood					
Illinois	63	68	50	62	57
Indiana, Iowa, Missouri	138	156	146	131	107
Total	201	224	196	193	164
Residue					
Illinois	50	92	135	100	107
Indiana, Iowa, Missouri	37	50	64	68	67
Total	87	142	199	168	174
All material	288	366	395	361	338

Table 7. — *Active woodpulp mills in the Central States by location, type of pulp produced, and capacity, 1971*

Company	Location	Mill capacity in tons per 24 hours 1/				
		Total	Sulfite	Sulfate	Groundwood and other mechanical	Semi-chemical
Illinois:						
Philip Carey Corp.	Wilmington	30	--	--	30	--
Celotex Corp.	Peoria	190	--	--	190	--
Alton Box Board Co.	Alton	300	--	--	--	300
Bird & Son, Inc.	Chicago	40	--	--	40	--
Certain-Teed Products Corp.	East St. Louis	100	--	--	100	--
Flintkote Co., The	Mt. Carmel	40	--	--	40	--
Johns-Manville Products Corp.	Waukegan	65	--	--	65	--
GAF Corp.	Joliet	100	--	--	100	--
Total	8 plants	865	--	--	565	300
Indiana:						
Weston Paper & Manufacturing Co.	Terre Haute	250	--	--	--	250
Total	1 plant	250	--	--	--	250
Iowa:						
Celotex Corp.	Dubuque	90	--	--	--	90
Consolidated Packaging Corp.	Fort Madison	135	--	--	--	135
United States Gypsum Co.	Fort Dodge	2/	--	--	--	--
Total	3 plants	225	--	--	--	225
Missouri:						
Huebert Fiberboard, Inc.	Booneville	60	--	--	60	--
GAF Corp.	Kansas City	90	--	--	90	--
Total	2 plants	150	--	--	150	--
All States	14 plants	1,490	--	--	715	775

1/ Lockwood's Directory of the Paper and Allied Industries, 1971-72, and 1972 Directory of the Forest Products Industry.

2/ Capacity not available.

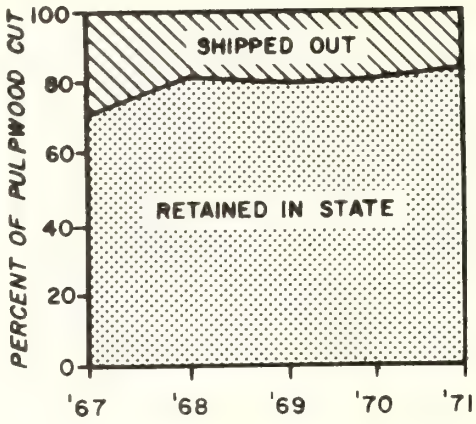
APPENDIX

Table 8. — *Lake States pulpwood production, by State of origin and destination, 1967-1971*

MINNESOTA

Year	Total cut	Destination of pulpwood: Minnesota	Wisconsin	Michigan	Other
		(Thousand standard cords)			
1967	1,205	884	299	*	22
1968	1,087	900	166	*	21
1969	1,192	977	188	--	27
1970	1,224	981	219	*	24
1971	1,196	992	188	*	16
5-year average	1,181	947	212	*	22

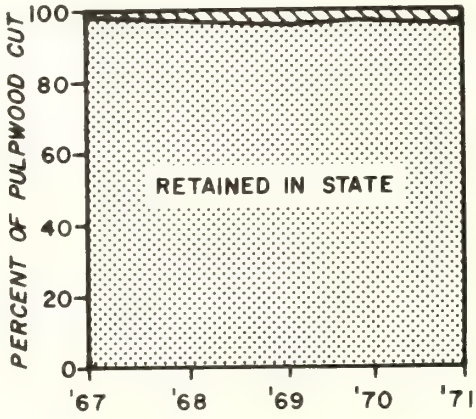
*Less than 500 cords.



WISCONSIN

Year	Total cut	Destination of pulpwood: Minnesota	Wisconsin	Michigan	Other
		(Thousand standard cords)			
1967	1,416	15	1,387	*	14
1968	1,297	22	1,259	4	12
1969	1,450	17	1,412	9	12
1970	1,656	11	1,627	10	8
1971	1,552	35	1,502	*	15
5-year average	1,474	20	1,437	5	12

*Less than 500 cords.



MICHIGAN

Year	Total cut	Destination of pulpwood: Minnesota	Wisconsin	Michigan	Other
		(Thousand standard cords)			
1967	1,344	—	660	684	*
1968	1,168	--	455	702	11
1969	1,302	--	537	752	13
1970	1,406	--	610	785	11
1971	1,267	--	567	688	12
5-year average	1,297	—	566	722	9

*Less than 500 cords.

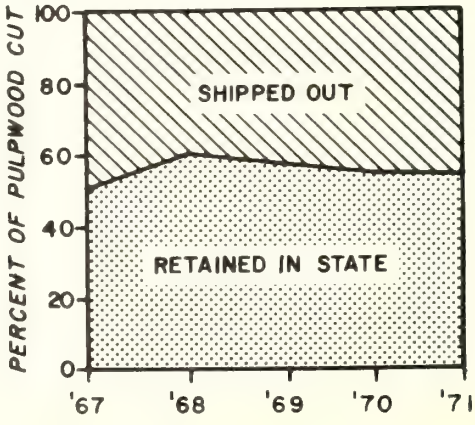


Table 9. — *Lake States pulpwood receipts by State and species, 1971*

(Thousand standard cords, roughwood basis)

Species	Minnesota	Wisconsin	Michigan	Total receipts
Aspen	585	1,011	298	1,894
Balsam fir	40	88	19	147
Birch	34	53	22	109
Hemlock	--	83	2	85
Pine	154	514	115	783
Spruce	116	167	18	301
Tamarack	*	37	*	37
Misc. hardwoods	38	295	165	498
All roundwood	967	2,248	639	3,854
Residue, softwood	32	193	1	226
Residue, hardwood	64	140	61	265
All wood material	1,063	2,581	701	4,345

*Less than 500 cords.

Table 10. — *Lake States pulpwood production, by Forest Survey Unit and destination by State, 1971*

(Thousand standard cords, roughwood basis)

Unit	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
MINNESOTA					
Northeastern	433	330	99	--	4
Central Pine	426	348	78	*	--
Rainy River	269	248	9	--	12
Hardwood and Prairie	68	66	2	--	--
Total	1,196	992	188	*	16
WISCONSIN					
Northeastern	713	--	710	*	3
Northwestern	555	22	533	--	--
Central	239	3	231	—	5
Southeastern and Southwestern	45	10	28	--	7
Total	1,552	35	1,502	*	15
MICHIGAN					
E. 1/2 Upper Peninsula	317	--	247	58	12
W. 1/2 Upper Peninsula	371	--	320	61	--
N. 1/2 Lower Peninsula	521	--	--	521	--
S. 1/2 Lower Peninsula	48	--	--	48	--
Total	1,267	--	567	688	12

*Less than 500 cords.

Table 11. — *Lake States pulpwood production by species, State, and Survey Unit, 1967-1971*

(Thousand standard cords, roughwood basis)

MINNESOTA

Unit	ASPEN Annual production					BALSAM FIR Annual production				
	1967	1968	1969	1970	1971	1967	1968	1969	1970	1971
Northeastern	205	203	204	208	205	26	12	10	9	9
Central Pine	265	218	289	249	246	30	18	18	22	20
Rainy River	108	131	148	127	135	20	13	12	14	11
Prairie and Hardwood	13	31	19	16	22	--	*	--	*	--
Total	591	583	660	600	608	76	43	40	45	40
WISCONSIN										
Northeastern	430	369	416	430	402	26	25	28	40	35
Northwestern	273	202	244	296	302	21	22	22	29	19
Central	35	55	35	44	31	*	4	*	*	*
Southeastern and Southwestern	1	3	2	1	1	*	--	--	--	--
Total	739	629	697	771	736	47	51	50	69	54
MICHIGAN										
E. 1/2 Upper Peninsula	144	95	119	124	125	50	39	27	41	26
W. 1/2 Upper Peninsula	237	167	184	180	177	38	22	16	25	25
N. 1/2 Lower Peninsula	258	274	296	288	242	3	1	1	*	1
S. 1/2 Lower Peninsula	7	5	7	4	3	--	--	--	--	--
Total	646	541	606	596	547	91	62	44	66	52
LAKE STATES	1,976	1,753	1,963	1,967	1,891	214	156	134	180	146

*Less than 500 cords.

(Continued on next page)

MINNESOTA

Unit	BIRCH Annual production					HEMLOCK Annual production				
	1967	1968	1969	1970	1971	1967	1968	1969	1970	1971
Northeastern	1	*	3	17	8	--	--	--	--	--
Central Pine	2	1	*	12	26	--	--	--	--	--
Rainy River	--	--	--	2	1	--	--	--	--	--
Prairie and Hardwood	--	--	--	*	*	--	--	--	--	--
Total	3	1	3	31	35	--	--	--	--	--
WISCONSIN										
Northeastern	28	18	23	32	22	27	22	32	33	28
Northwestern	46	35	37	42	28	13	18	16	16	13
Central	10	3	3	2	1	2	4	3	3	1
Southeastern and Southwestern	*	*	--	--	--	--	*	--	--	--
Total	84	56	63	76	51	42	44	51	52	42
MICHIGAN										
E. 1/2 Upper Peninsula	3	2	1	4	1	16	9	11	17	8
W. 1/2 Upper Peninsula	2	*	1	2	3	44	36	52	52	34
N. 1/2 Lower Peninsula	6	11	21	27	19	--	--	*	*	*
S. 1/2 Lower Peninsula	--	--	*	--	--	--	--	--	--	--
Total	11	13	23	33	23	60	45	63	69	42
LAKE STATES	55	70	89	140	109	102	89	114	121	84

*Less than 500 cords.

(Continued on next page)

MINNESOTA

Unit	JACK PINE[1/] Annual production					SPRUCE Annual production				
	1967	1968	1969	1970	1971	1967	1968	1969	1970	1971
Northeastern	108	121	133	123	119	93	66	66	64	64
Central Pine	69	62	74	68	57	45	31	27	31	29
Rainy River	11	12	18	19	26	79	60	60	85	74
Prairie and Hardwood	14	8	12	11	12	1	*	1	1	1
Total	202	203	237	221	214	218	157	154	181	168
WISCONSIN										
Northeastern	45	46	63	72	68	10	7	10	12	9
Northwestern	61	57	77	96	105	3	3	3	4	3
Central	67	94	75	87	93	*	1	*	*	*
Southeastern and Southwestern	1	2	1	4	2	--	--	--	--	--
Total	174	199	216	259	268	13	11	13	16	12
MICHIGAN										
E. 1/2 Upper Peninsula	40	39	59	57	80	33	23	20	29	22
W. 1/2 Upper Peninsula	36	33	38	34	41	40	16	18	22	22
N. 1/2 Lower Peninsula	115	131	109	145	110	2	*	1	*	1
S. 1/2 Lower Peninsula	2	2	1	4	4	--	--	--	--	--
Total	193	205	207	240	235	75	39	39	51	45
LAKE STATES	569	607	660	720	717	306	207	206	248	225

*Less than 500 cords.

(Continued on next page)

1/ Includes small quantity of red and white pine.

Unit	TAMARACK Annual production					MISCELLANEOUS HARDWOODS Annual production				
	1967	1968	1969	1970	1971	1967	1968	1969	1970	1971
Northeastern	6	4	4	5	4	9	7	11	14	12
Central Pine	27	16	14	23	22	6	5	11	3	*
Rainy River	4	4	2	7	5	23	9	8	9	9
Prairie and Hardwood	3	1	1	1	1	1	2	2	1	9
Total	40	25	21	36	32	39	23	32	27	30
WISCONSIN										
Northeastern	2	3	1	2	2	64	60	87	110	105
Northwestern	1	2	1	2	1	62	50	61	79	67
Central	--	*	*	*	*	71	68	81	99	89
Southeastern and Southwestern	--	--	--	--	--	6	7	9	8	8
Total	3	5	2	4	3	203	185	238	296	269
MICHIGAN										
E. 1/2 Upper Peninsula	1	1	1	2	1	6	3	10	18	14
W. 1/2 Upper Peninsula	*	1	1	1	2	79	48	38	28	41
N. 1/2 Lower Peninsula	--	--	--	--	--	112	116	141	143	136
S. 1/2 Lower Peninsula	--	--	--	--	--	2	4	7	7	6
Total	1	2	2	3	3	199	171	196	196	197
LAKE STATES	44	32	25	43	38	484	379	466	519	496

*Less than 500 cords.

(Continued on next page)

MINNESOTA

Unit	RESIDUE					ALL SPECIES[1/]				
	Annual production					Annual production				
	1967	1968	1969	1970	1971	1967	1968	1969	1970	1971
Northeastern	11	8	6	12	12	459	421	437	452	433
Central Pine	9	12	4	28	26	453	363	437	436	426
Rainy River	4	11	5	5	8	249	240	253	268	269
Prairie and Hardwood	12	21	30	38	23	44	63	65	68	68
Total	36	52	45	83	69	1,205	1,087	1,192	1,224	1,196
WISCONSIN										
Northeastern	41	53	49	43	42	673	603	709	774	713
Northwestern	22	21	17	17	17	502	410	478	581	555
Central	22	16	16	20	24	207	245	213	255	239
Southeastern and Southwestern	26	27	38	33	34	34	39	50	46	45
Total	111	117	120	113	117	1,416	1,297	1,450	1,656	1,552
MICHIGAN										
E. 1/2 Upper Peninsula	2	2	29	37	40	295	213	277	329	317
W. 1/2 Upper Peninsula	32	34	54	63	36	508	357	402	407	381
N. 1/2 Lower Peninsula	11	16	6	12	12	507	549	575	615	521
S. 1/2 Lower Peninsula	23	38	33	40	35	34	49	48	55	48
Total	68	90	122	152	123	1,344	1,168	1,302	1,406	1,267
LAKE STATES	215	259	287	348	309	3,965	3,552	3,944	4,286	4,015

1/ Including residues.

Table 12. — *Lake States pulpwood production by county and species, 1971*

(Thousand standard cords, roughwood basis)

WISCONSIN

Unit and county[1/]	All species	Aspen	Balsam	Birch	Hemlock	Pine	Spruce	Tamarack	Miscellaneous hardwoods	Residues[2/]
NORTHEASTERN:										
Florence	43	35	1	*	3	1	1	--	2	
Forest	82	48	8	1	6	5	1	*	13	
Langlade	84	57	1	4	1	2	*	1	18	
Lincoln	77	44	6	3	1	4	1	*	18	
Marinette	97	73	6	*	1	9	2	*	6	
Oconto	30	25	1	1	*	2	*	--	1	
Oneida	136	66	8	7	2	25	3	1	24	
Shawano[3/]	37	19	*	*	12	1	*	*	5	
Vilas	85	35	4	6	2	19	1	*	18	
Total	713	402	35	22	28	68	9	2	105	42
NORTHWESTERN:										
Ashland	56	32	6	2	3	7	1	*	5	
Barron	1	*	--	*	--	--	--	--	1	
Bayfield	78	43	*	5	1	26	1	--	2	
Burnett	17	2	--	--	--	15	--	*	*	
Douglas	102	72	*	1	--	28	*	*	1	
Iron	60	47	2	2	2	1	*	*	6	
Polk	2	*	--	--	--	2	--	--	--	
Price	91	48	6	9	1	6	1	1	19	
Rusk	18	12	*	1	*	*	*	--	5	
Sawyer	34	14	3	5	2	4	*	*	6	
Taylor	51	22	1	3	4	*	*	*	21	
Washburn	28	10	1	*	*	16	*	*	1	
Total	555	302	19	28	13	105	3	1	67	17
CENTRAL:										
Adams	30	*	--	*	--	18	--	--	12	
Chippewa	9	6	--	*	*	1	--	--	2	
Clark	17	4	*	*	*	3	--	--	10	
Eau Claire	5	1	--	--	--	4	--	--	*	
Jackson	19	*	--	--	--	18	--	--	1	
Juneau	25	*	--	*	--	17	--	--	8	
Marathon	41	13	*	1	1	1	*	--	25	
Marquette	7	--	--	--	--	1	--	--	6	
Monroe	5	1	--	--	--	3	--	--	1	
Portage	13	2	*	--	*	5	*	*	6	
Waupaca	5	3	*	--	*	1	--	--	1	
Waushara	12	*	--	*	--	8	--	--	4	
Wood	27	1	*	*	*	13	*	*	13	
Total	239	31	*	1	1	93	*	*	89	24

(Continued on next page)

WISCONSIN (continued)

Unit and county 1/	All species	Aspen	Balsam	Birch	Hemlock	Pine	Spruce	Tamarack	Miscellaneous hardwoods	Residues 2/
SOUTHWESTERN:										
Buffalo	*	--	--	--	--	*	--	--	--	
Dunn	*	--	--	--	--	*	--	--	--	
Grant	4	--	--	--	--	--	--	--	4	
Iowa	1	--	--	--	--	--	--	--	1	
La Crosse	*	--	--	--	--	*	--	--	--	
Pepin	1	--	--	--	--	1	--	--	--	
Richland	*	--	--	--	--	*	--	--	--	
Sauk	*	--	--	--	--	*	--	--	--	
Trempealeau	--	--	--	--	--	--	--	--	--	
Total	32	--	--	--	--	1	--	--	5	26
SOUTHEASTERN:										
Brown	1	1	--	--	--	*	--	--	*	
Columbia	4	--	--	--	--	1	--	--	3	
Dodge	*	*	--	--	--	--	--	--	--	
Fond du Lac	*	--	--	--	--	*	--	--	--	
Green Lake	*	--	--	--	--	*	--	--	--	
Outagamie	*	--	--	--	--	--	--	--	*	
Sheboygan	*	--	--	--	--	*	--	--	--	
Total	13	1	--	--	--	1	--	--	3	8
State total	1,552	736	54	51	42	268	12	3	269	117

*Less than 500 cords.

1/ Includes only those counties that supplied pulpwood in 1971.

2/ County figures are not available.

3/ Includes Menominee County.

(Continued on next page)

MICHIGAN

Unit and county[1]	All species	Aspen	Balsam	Birch	Hemlock	Pine	Spruce	Tamarack	Miscellaneous hardwoods	Residues[2]
E. 1/2 UPPER PENINSULA:										
Alger	11	2	1	*	--	6	1	--	1	
Chippewa	28	6	1	*	*	14	3	*	4	
Delta	64	24	11	1	4	16	6	*	2	
Luce	34	1	2	*	1	25	4	*	1	
Mackinac	14	5	1	*	--	4	1	--	3	
Menominee	84	67	7	*	2	*	5	1	2	
Schoolcraft	42	20	3	*	1	15	2	*	1	
Total	317	125	26	1	*	80	22	1	14	40
W. 1/2 UPPER PENINSULA:										
Baraga	46	22	*	1	6	8	1	1	7	
Dickinson	68	49	7	*	2	2	6	1	1	
Gogebic	41	17	2	*	9	5	1	*	7	
Houghton	20	10	1	*	5	1	*	*	3	
Iron	84	48	8	1	5	3	4	*	15	
Keweenaw	2	--	1	--	--	--	1	--	--	
Marquette	56	15	6	*	3	22	9	*	1	
Ontonagon	28	16	*	1	4	*	*	--	7	
Total	381	177	25	3	34	41	22	2	41	36
N. 1/2 LOWER PENINSULA:										
Alcona	45	27	*	2	--	5	*	--	11	
Alpena	16	10	*	1	--	2	*	--	3	
Antrim	1	*	--	--	--	1	--	--	--	
Arenac	1	*	--	*	--	--	--	--	1	
Benzie	9	6	--	1	--	--	--	--	2	
Charlevoix	*	*	--	--	--	--	--	--	--	
Cheboygan	11	7	*	1	--	1	*	--	2	
Clare	21	11	--	1	--	4	--	--	5	
Crawford	18	1	*	*	--	15	*	--	2	
Gladwin	8	4	--	1	--	1	--	--	2	
Grand Traverse	8	4	--	*	--	1	--	--	3	
Iosco	18	2	*	*	--	15	*	--	1	
Isabella	3	2	--	--	--	--	--	--	1	
Kalkaska	11	6	*	*	--	3	*	--	2	
Lake	39	10	--	1	*	9	--	--	19	
Leelanau	5	3	--	*	--	--	*	--	2	
Manistee	28	13	--	1	*	1	--	--	13	
Mason	20	8	--	1	*	4	--	--	7	
Mecosta	14	9	--	*	--	1	--	--	4	
Midland	2	2	--	--	--	--	--	--	--	
Missaukee	12	8	*	1	*	*	*	--	3	
Montmorency	24	17	*	1	--	1	*	--	5	
Newaygo	18	8	--	*	--	2	--	--	8	
Oceana	7	2	--	*	--	*	--	--	5	
Ogemaw	15	6	--	1	--	4	--	--	4	
Osceola	32	21	--	1	--	*	--	--	10	
Oscoda	47	20	*	2	--	20	*	--	5	
Otsego	1	*	--	--	--	*	--	--	1	
Presque Isle	19	10	1	3	--	2	1	--	2	
Roscommon	21	11	*	*	*	5	*	--	5	
Wexford	35	14	--	*	--	13	--	--	8	
Total	521	242	1	19	*	110	1	--	136	12

(Continued on next page)

MICHIGAN (Continued)

Unit and county[1]	All species	Aspen	Balsam	Birch	Hemlock	Pine	Spruce	Tamarack	Miscellaneous hardwoods	Residues[2]
S. 1/2 LOWER PENINSULA:										
Allegan	2	*	--	--	--	1	--	--	1	
Barry	*	--	--	--	--	--	--	--	*	
Cass	*	--	--	--	--	*	--	--	--	
Gratiot	2	1	--	--	--	*	--	--	1	
Ionia	*	*	--	--	--	--	--	--	*	
Kent	*	--	--	--	--	*	--	--	*	
Montcalm	3	1	--	--	--	*	--	--	2	
Muskegon	4	*	--	--	--	3	--	--	1	
Ottawa	*	--	--	--	--	*	--	--	*	
St. Joseph	1	1	--	--	--	--	--	--	*	
Van Buren	1	*	--	--	--	--	--	--	1	
Total	48	3	--	--	--	4	--	--	6	35
State total	1,267	547	52	23	42	235	45	3	197	123

*Less than 500 cords.

1/ Includes only those counties that supplied pulpwood in 1971.

2/ County figures are not available.

(Continued on next page)

MINNESOTA

Unit and county[1]	All species	Aspen	Balsam	Birch	Pine	Spruce	Tamarack	Miscellaneous hardwoods	Residues[2]
NORTHEASTERN:									
Carlton	27	21	1	3	1	1	*	--	
Cook	36	4	1	--	7	24	*	--	
Lake	65	14	1	2	27	21	--	--	
Pine	14	11	--	*	*	--	*	3	
St. Louis	279	155	6	3	84	18	4	9	
Total	433	205	9	8	119	64	4	12	12
CENTRAL PINE:									
Aitkin	42	32	2	1	1	2	4	--	
Becker	1	1	*	*	*	*	--	--	
Beltrami	107	60	8	13	15	6	5	--	
Cass	46	31	1	3	8	1	2	--	
Clearwater	48	39	*	1	3	1	4	--	
Crow Wing	8	3	*	*	5	*	--	--	
Hubbard	18	11	*	*	6	*	1	--	
Itasca	126	68	9	8	16	19	6	*	
Wadena	4	1	--	*	3	--	--	--	
Total	426	246	20	26	57	29	22	*	26
RAINY RIVER:									
Koochiching	237	134	11	1	23	55	4	9	
Lake of the Woods	24	1	*	--	3	19	1	--	
Total	269	135	11	1	26	74	5	9	8
HARDWOOD:									
Benton	*	*	--	--	--	--	--	--	
Kanabec	3	3	--	--	--	--	--	--	
Mille Lacs	17	13	--	--	--	--	--	4	
Morrison	4	4	--	*	*	--	--	--	
Scott	*	*	--	--	--	--	--	--	
Todd	*	--	--	--	*	--	--	--	
Wabasha	5	--	--	--	--	--	--	5	
Total	52	20	--	*	*	--	--	9	23
PRAIRIE:									
Mahnomen	1	1	--	--	--	--	*	--	
Polk	1	--	--	--	--	--	1	--	
Roseau	14	1	--	--	12	1	--	--	
Total	16	2	--	--	12	1	1	--	--
State total	1,196	608	40	35	214	168	32	30	69

*Less than 500 cords.

1/ Includes only those counties that supplied pulpwood in 1971.

2/ County figures are not available.

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RECENT REPORTS ON PULPWOOD PRODUCTION PUBLISHED BY THE NORTH CENTRAL FOREST EXPERIMENT STATION

Pulpwood production in Lake States Counties, by Arthur G. Horn:

- 1961 data: Station Paper 106, 18 p.
- 1962 data: Research Paper LS-5, 16 p.
- 1963 data: Resource Bulletin LS-1, 17 p.
- 1964 data: Resource Bulletin LS-2, 19 p.

Pulpwood Production in the North Central Region by County, by James E. Blyth:

- 1965 data: Resource Bulletin NC-2, 24 p.
- 1966 data: Resource Bulletin NC-3, 27 p.
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- 1968 data: Resource Bulletin NC-8, 22 p.
- 1969 data: Resource Bulletin NC-11, 23 p.
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Brief Notes for the past 10 years are:

- 1961: Tech. Note 624
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1973

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1973

PULPWOOD PRODUCTION

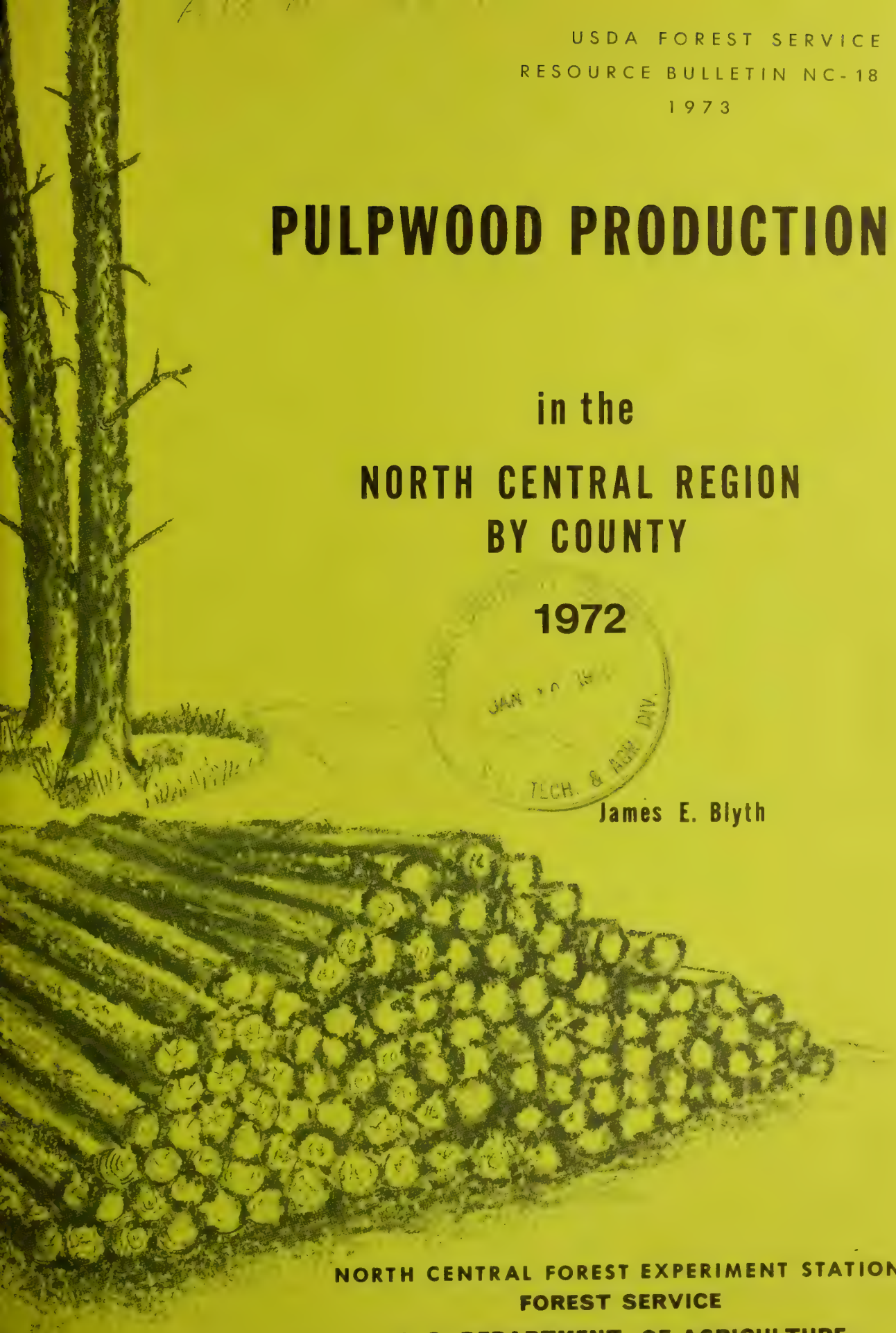
in the

NORTH CENTRAL REGION BY COUNTY

1972

JAN
TECH. & AGR. DIV.

James E. Blyth



NORTH CENTRAL FOREST EXPERIMENT STATION
FOREST SERVICE
U. S. DEPARTMENT OF AGRICULTURE

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PULPWOOD PRODUCTION IN THE NORTH CENTRAL REGION, BY COUNTY, 1972

James E. Blyth

This is the 14th annual report on the pulpwood harvest in Lake States counties and the 13th annual report on the Central States harvest. The Lake States (Michigan, Minnesota, and Wisconsin) and Central States (Illinois, Indiana, Iowa, and Missouri) are discussed separately because the timber types in each area are different and less information can be released about the Central States--more detailed data published on pulpwood production and receipts in the Central States would reveal the operations of individual mills.

Quantities shown may vary slightly from one table to another because of rounding differences. These differences are insignificant.

Pulpmills using North Central States timber in 1972 reported their pulpwood receipts by State and county. Their cooperation is gratefully acknowledged. Thanks are also due to Al Boelter, Staff Forester, Forest Resource Development, Michigan Department of Natural Resources, for collecting data on the Michigan pulpmills, and to Jerold Hahn of the North Central Station for extensive computer programing and data computations.

LAKE STATES

Lake States pulpwood production climbed 7 percent in 1972.[1/] Mill expansions, rising demand for paper products, and a new mill were major reasons for the increased harvest.

Production at Previous Peak Levels

Pulpwood production in 1972 slightly surpassed the highs set in 1966 and 1970. Only 1 percent of the 4.3 million cords harvested was consumed outside the Lake States (table 1). Ninety-two out of every 100 cords were roundwood (including chips from roundwood); the remainder was residue from local wood-using plants.[2/] Most of the Lake States residue is delivered to pulpmills in chip form; about 5 out of 6 cords are hardwood. Use of Lake States residue for pulp has doubled since 1966.

Except for pine and tamarack, harvests of all reported species increased. Harvesting of miscellaneous hardwoods climbed 176,000 cords, reflecting an easing of species restrictions with improved pulping technology.

Despite the rise in pulpwood output, pulpwood peeled before delivery dropped 158,000 cords from 1971 and constituted only 14 percent of the roundwood (primarily aspen) in 1972. Only 28 percent of the aspen was peeled in 1972: 54 percent in Wisconsin, 20 percent in Michigan, and 9 percent in Minnesota (fig. 1). Rising woods labor costs and greater bark tolerance in pulp are probably the major reasons why less aspen is peeled in the woods.

1972 Pulpwood Production by State

Wisconsin produced 36 percent of the Lake States pulpwood, Michigan 33 percent, and Minnesota 31 percent.

Minnesota boosts output 158,000 cords.--Demand for aspen, balsam fir, and spruce was much stronger than in 1971. Aspen constituted 54 percent of the roundwood harvest followed by pine (17 percent) and spruce (15 percent). Two counties--St. Louis and Koochiching--provided almost half of the roundwood.

Michigan production rises 134,000 cords.--Michigan's harvest surged ahead on strong demand

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1/ Pulpwood production is defined as the pulpwood volume from timber land in a specified area that was received at all mills during 1972, whereas pulpwood receipts are defined as the volume of wood received by mills in a specified area regardless of the geographic source.

2/ Residue is the byproduct from sawmills, veneer mills, cooperage mills, and other wood-using plants that is used for pulping. Residue includes slabs, edgings, veneer cores, sawdust, wood flour, and chips manufactured from these byproducts.

Table 1.--Production and imports of pulpwood, Lake States, 1972

(In standard cords, unpeeled)

SPECIES AND DESTINATION	PRODUCTION BY STATES 1/				IMPORTS			TOTAL RECEIPTS
	MICHIGAN	MINNESOTA	WISCONSIN	REGIONAL TOTAL	OTHER U.S. 2/	CANADA	TOTAL IMPORTS	
ASPEN								
MICHIGAN	321871	0	250	322121	0	0	0	322121
MINNESOTA	0	650789	22000	672789	0	13087	13087	685876
WISCONSIN	207004	35350	659636	901990	0	0	0	901990
EXPORTED 2/	466	2667	2731	5864	0	0	0	0
TOTAL	529341	688806	684617	1902764	0	13087	13087	1909987
BALSAM FIR								
MICHIGAN	27467	0	29	27496	0	0	0	27496
MINNESOTA	0	65037	0	65037	0	0	0	65037
WISCONSIN	32944	352	48765	82061	0	0	0	82061
EXPORTED 2/	0	22	0	22	0	0	0	0
TOTAL	60411	65411	48794	174616	0	0	0	174594
BIRCH								
MICHIGAN	34138	0	375	34513	0	0	0	34513
MINNESOTA	0	41000	0	41000	0	0	0	41000
WISCONSIN	1992	0	45803	47795	0	0	0	47795
EXPORTED 2/	0	1333	667	2000	0	0	0	0
TOTAL	36130	42333	46845	125308	0	0	0	123308
HEMLOCK								
MICHIGAN	22078	0	47	22125	0	0	0	22125
WISCONSIN	27737	0	41624	69361	0	0	0	69361
TOTAL	49815	0	41671	91486	0	0	0	91486
PINE								
MICHIGAN	126655	0	41	126696	384	0	384	127080
MINNESOTA	0	165976	0	165976	0	100	100	166076
WISCONSIN	101908	49491	246078	397477	46003	0	46003	443480
EXPORTED 2/	0	300	0	300	0	0	0	0
TOTAL	228563	215767	246119	690449	46387	100	46487	736636
SPRUCE								
MICHIGAN	14136	0	8	14144	0	0	0	14144
MINNESOTA	0	126981	0	126981	0	1404	1404	128385
WISCONSIN	24264	52556	12879	89699	0	91531	91531	181230
EXPORTED 2/	0	12497	0	12497	0	0	0	0
TOTAL	38400	192034	12887	243321	0	92935	92935	323759
TAMARACK								
MICHIGAN	2523	0	7	2530	0	0	0	2530
MINNESOTA	0	3893	0	3893	0	0	0	3893
WISCONSIN	785	27436	2661	30882	0	0	0	30882
TOTAL	3308	31329	2668	37305	0	0	0	37305
MISC. HARDWOODS								
MICHIGAN	280092	0	1875	281967	0	0	0	281967
MINNESOTA	0	29670	0	29670	0	6425	6425	36095
WISCONSIN	28249	0	325860	354109	0	0	0	354109
EXPORTED 2/	203	447	5306	5956	0	0	0	0
TOTAL	308544	30117	333041	671702	0	6425	6425	672171
CEDAR								
MICHIGAN	3784	0	0	3784	0	0	0	3784
TOTAL	3784	0	0	3784	0	0	0	3784
TOTAL ROUNDWOOD								
MICHIGAN	832744	0	2632	835376	384	0	384	835760
MINNESOTA	0	1083346	22000	1105346	0	21016	21016	1126362
WISCONSIN	424883	165185	1383306	1973374	46003	91531	137534	2110908
EXPORTED 2/	669	17266	8704	26639	0	0	0	0
TOTAL	1258296	1265797	1416642	3940735	46387	112547	158934	4073030
RESIDUE,SOFTWOOD								
MICHIGAN	9234	0	0	9234	0	0	0	9234
MINNESOTA	0	22076	0	22076	0	946	946	23022
WISCONSIN	2637	1054	10168	13859	183842	131	183973	197832
EXPORTED 2/	9007	2179	401	11587	0	0	0	0
TOTAL	20878	25309	10569	56756	183842	1077	184919	230088
RESIDUE,HARDWOOD								
MICHIGAN	75184	0	0	75184	11149	0	11149	86333
MINNESOTA	0	62568	6153	68721	2235	3710	5945	74666
WISCONSIN	42058	0	99474	141532	0	0	0	141532
EXPORTED 2/	4322	0	4697	9019	0	0	0	0
TOTAL	121564	62568	110324	294456	13384	3710	17094	302531
ALL WOOD MATERIAL								
MICHIGAN	917162	0	2632	919794	11533	0	11533	931327
MINNESOTA	0	1167990	28153	1196143	2235	25472	27907	1224050
WISCONSIN	469578	166239	1492948	2128765	229845	91662	321507	2450272
EXPORTED 2/	13998	19445	13802	47245	0	0	0	0
TOTAL	1400738	1353674	1537535	4291947	243613	117334	360947	4605649

1/ VERTICAL COLUMNS OF FIGURES UNDER BOX HEADING -PRODUCTION BY STATES- PRESENT THE AMOUNT OF PULPWOOD CUT IN EACH STATE

2/ MOSTLY WESTERN STATES.

3/ PULPWOOD SHIPPED TO MILLS OUTSIDE OF REGION.

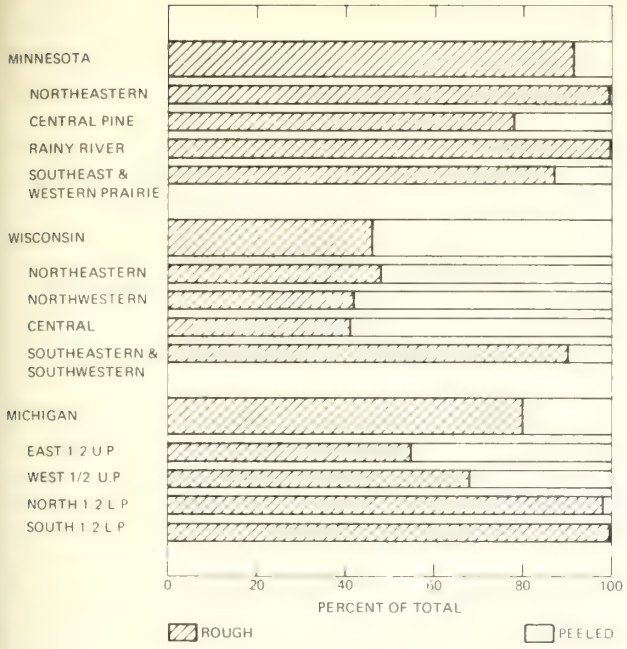


Figure 1.--Percent of rough and peeled aspen roundwood production by State and Forest Survey Unit, 1972.

for miscellaneous hardwoods. Logging activity expanded in all areas of Michigan but was most vigorous in the Western Upper Peninsula. Top-producing counties were Dickinson, Iron, and Marquette.

Wisconsin production stable.--Aspen output dropped 7 percent but was offset by a 24-percent gain in miscellaneous hardwoods. Harvesting declined in northeast Wisconsin, but rose slightly to moderately in the other Units. Oneida, Price, and Marinette County loggers cut the largest pulpwood volumes.

The distribution of the harvest is shown in two ways: first, the amount of pulpwood cut relative to commercial forest area (fig. 2); second, the amount of pulpwood cut relative to the merchantable volume in major pulpwood species (fig.3). Seventeen Wisconsin counties, 13 in Michigan and 7 in Minnesota, each furnished more than 100 cords of pulpwood per 1,000 acres of stocked commercial forest land. Cutting pressure was greatest per 1,000 cords of merchantable volume in principal pulpwood species in central and northeast Wisconsin and western Upper Michigan.

Receipts Increase 6 Percent

Forty-three Lake States plants received 4.6 million cords of pulpwood in 1972. Of these plants, 38 used aspen, 18 used spruce, and 16 used balsam fir (table 2). One more plant began using wood chips from residue.

Except for pine and tamarack, receipts of every species rose in 1972. Deliveries of miscellaneous hardwoods in the Lake States were 150,000 cords higher than the previous peak. Softwood residue receipts increased for the seventh straight year.

Hardwoods are becoming a more important component of the pulpwood used in the Lake States. Of the 1972 wood receipts, 65 percent was hardwood compared with 58 percent in 1964 and 61 percent in 1968.

Two-thirds of the imported wood came from other States, the remainder came from Canada. Wyoming, South Dakota, Montana, and Idaho each furnished more than 25,000 cords of softwood residue, primarily as chips. Although softwood roundwood imports from Canada rebounded, they were relatively low. The abrupt decline in purchases of Canadian softwood roundwood in recent years is probably caused by higher delivered wood prices resulting from increases in logging labor costs in Canada.

Pulpwood marketing in Michigan expanded broadly in 1972. Receipts rose 231,000 cords from 1971 with every species group increasing except spruce. Purchases of miscellaneous hardwoods were particularly large.

Pulpwood demand in Minnesota was also higher by 161,000 cords. Aspen receipts advanced 17 percent, accounting for three-fifths of the increase.

In Wisconsin, pulpwood receipts fell 5 percent. In contrast to Minnesota, aspen procurement fell more than 100,000 cords. Pine receipts plunged 71,000 cords; miscellaneous hardwoods receipts rose 59,000 cords.

Regional Mill Capacity Tops 10,000 Tons

Opening of a new mill helped raise the Lake States mill capacity by about 7 percent (table 3). Two small mills closed during 1972 and two other mills are expected to change ownership. Mill capacity will probably remain stable during 1973.

CENTRAL STATES

Central States pulpwood production continued its upward trend for the fifth straight year. The advance was widespread--every State, species group, and residue category showed an increase. More exports to mills in adjacent States stimulated the rise in output. Hardwood residue was the most important component of total production (table 4).

Production Approaches Half Million Cords

Central States 1972 pulpwood production was 463,000 cords, double that reported in 1965. During

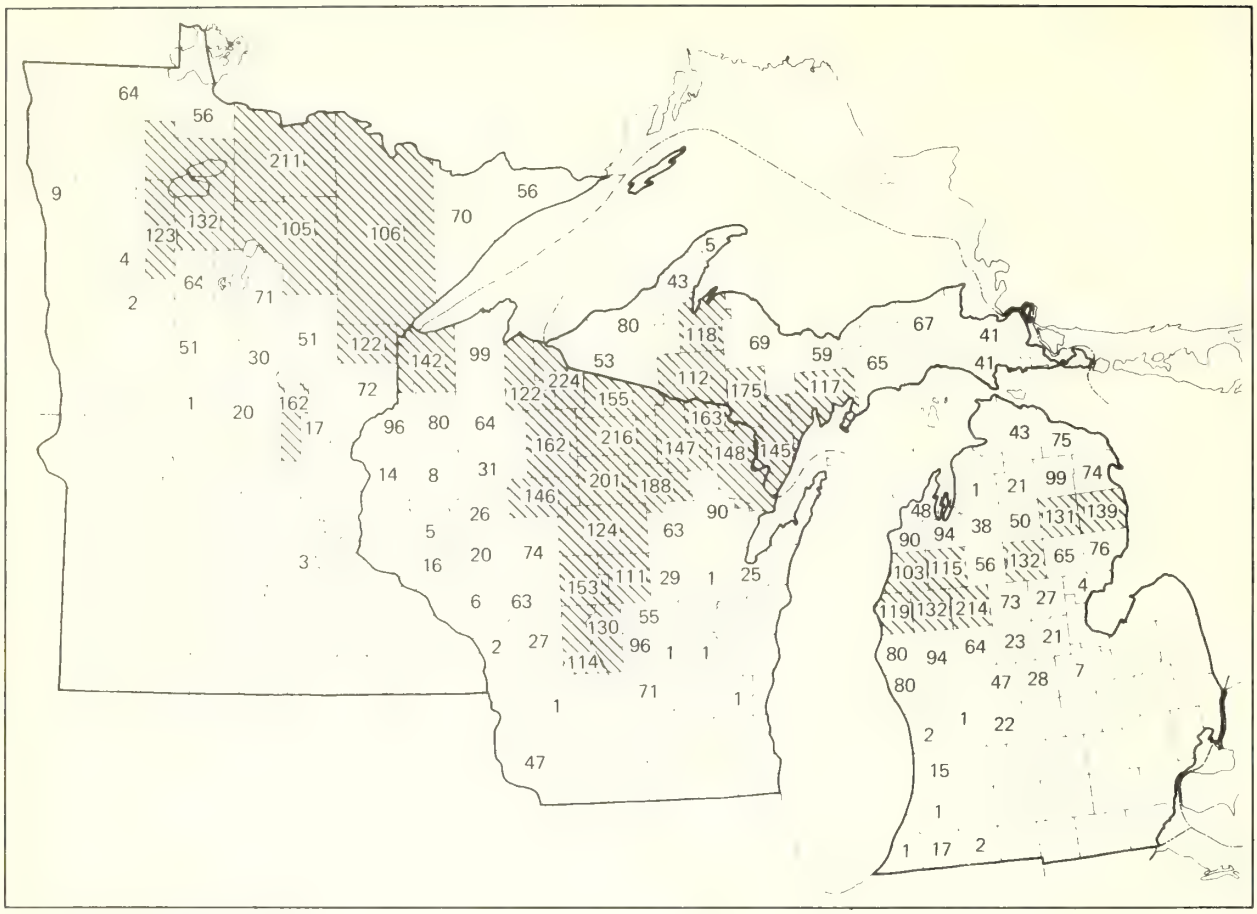


Figure 2.--Cords of pulpwood cut per 1,000 acres of stocked commercial forest land in principal pulpwood-producing counties, 1972. Cross-hatching shows counties that supplied 100 or more cords of pulpwood per 1,000 acres of stocked commercial forest land.

this same period, pulp mills increased their use of Central States hardwood residue almost nine-fold. One-third of the wood, primarily hardwood residue and hard hardwood roundwood, was exported in 1972; Kentucky was the principal customer, with the remainder shipped to Ohio, Michigan, Louisiana, and Minnesota.

Indiana, Illinois, and Missouri each produced more pulpwood than ever before. Indiana producers now market more pulpwood outside the Central States than within (table 5). If the rate of change in recent years continues, Missouri pulpwood output will overtake that of Indiana and Illinois in 2 to 5 years. Iowa production has held steady for 3 years.

Loggers cut pulpwood in 117 counties: 40 in Indiana, 36 in Illinois, 29 in Missouri, and 12 in Iowa (fig. 4). Procurement areas were similar to those in 1971. A few additional counties in central and west central Indiana supplied pulpwood in 1972.

Receipts Inch Up 5 Percent

Thirteen Central States plants procured 356,000 cords in 1972 as receipts continued to remain in the narrow range of recent years (table 6). The additional receipts over 1971 were mainly hardwood residue. Changes in roundwood procurement were insignificant. Central States mills obtained 1 out of 7 cords from other States; more than half came from the Lake States. Much of the imported wood was residue.

Pulping capacity remained at about 1,500 tons per day (table 7). No major capacity changes were announced by resident mills. Mills in adjacent States are likely to continue expanding their wood purchases in Illinois, Indiana, and Missouri.

* * *

Other detailed pulpwood production data are found in the Appendix.

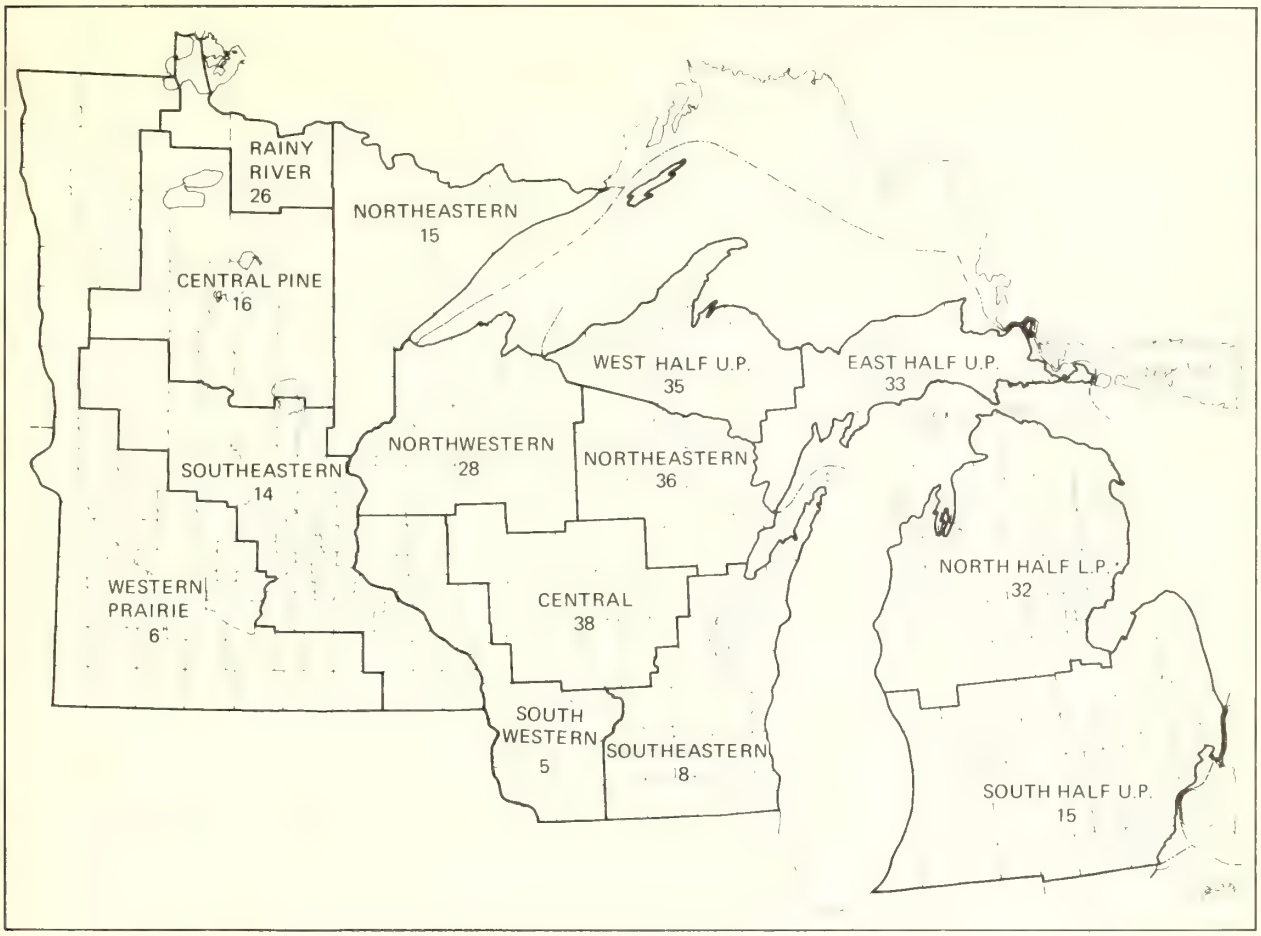


Figure 3.--Cords of pulpwood bolts and logs harvested per 1,000 cords of merchantable volume in principal pulpwood species by Forest Survey Unit, 1972. The heavy lines delineate the boundaries of the Forest Survey Units in each State.

Table 2.--Plants using the different species of wood for pulping in 1972

(In numbers)

Species and kind of material	Lake States	Minnesota	Wisconsin	Michigan
Aspen	38	9	22	7
Balsam fir	16	5	7	4
Birch	11	1	6	4
Hemlock	7	--	6	1
Pine	11	2	5	4
Spruce	18	5	11	2
Tamarack	6	2	3	1
Miscellaneous hardwoods	15	1	8	6
Wood chips	13	2	6	5
Slabwood and other residue	5	1	3	1
Total plants	43	9	25	9

Table 3.--Active woodpulp mills in the Lake States, by location, type of pulp produced, and capacity, 1972

COMPANY	LOCATION	MILL CAPACITY IN TONS PER 24 HOURS 1/				
		TOTAL	SULFITE	SULFATE	GROUNDWOOD AND OTHER MECHANICAL	SEMI-CHEMICAL
MICHIGAN:						
ARTIBI CORP.	ALPENA	430	0	0	430	0
CELOTEX CORP.	L ANSE	270	0	0	270	0
HOERNER WALDORF CORP.	ONTONAGON	220	0	0	0	220
MANISTIQUE PULP AND PAPER CO.	MANISTIQUE	90	0	0	90	0
MEAD CORP.	ESCANABA	750	0	600	150	0
MENASHA CORP.	OTSEGO	225	0	0	0	225
PACKAGING CORP.OF AMERICA	FILER CITY	600	0	200	0	400
SCOTT PAPER CO.	MENOMINEE	20	0	0	20	0
WARREN CO., S.D.	MUSKEGON	240	0	240	0	0
TOTAL	9 PLANTS.....	2845	0	1040	960	845
MINNESOTA :						
BLANDIN PAPER CO.	GRAND RAPIDS	205	0	0	205	0
HENNEPIN PAPER CO.	LITTLE FALLS	75	0	0	75	0
BOISE CASCADE CORP.	INTERNATIONAL FALLS	770	0	320	450	0
NORTHWEST PAPER CO.	CLOQUET	445	120	325	0	0
SUPERWOOD CORP.	BEMIDJI	90	0	0	90	0
ST REGIS PAPER CO.	SARTELL	125	0	0	125	0
SUPERWOOD CORP.	DULUTH	240	0	0	240	0
HOERNER WALDORF CORP.	ST PAUL	300	0	0	0	300
CONWED CORP.	CLOQUET	350	0	0	350	0
TOTAL	9 PLANTS.....	2600	120	645	1535	300
WISCONSIN :						
AMERICAN CAN CO.	GREEN BAY	210	150	0	60	0
AMERICAN CAN CO.	ROTHSCHILD	200	200	0	0	0
BADGER PAPER MILLS	PESHTIGO	90	90	0	0	0
APPLETON PAPERS INC.	COMBINED LOCKS	200	0	0	200	0
CONSOLIDATED PAPERS . INC.	APPLETON	180	180	0	0	0
CONSOLIDATED PAPERS . INC.	STEVENS POINT	100	0	0	100	0
CONSOLIDATED PAPERS . INC.	WISCONSIN RAPIDS	565	0	360	205	0
GREEN BAY PACKAGING. INC.	GREEN BAY	200	0	0	0	200
KANSAS CITY STAR CO.	PARK FALLS	115	115	0	0	0
KIMBERLY-CLARK CORP.	KIMBERLY	115	0	0	115	0
PENTAIR INDUSTRIES	NIAGARA	150	0	0	150	0
MOSINEE PAPER MILLS CO.	MOSINEE	200	0	200	0	0
NEKOOSA-EDWARDS PAPER CO.	NEKOOSA	310	0	310	0	0
NEKOOSA-EDWARDS PAPER CO.	PORT EDWARDS	215	215	0	0	0
OWENS-ILLINOIS	TOMAHAWK	615	0	0	0	615
CHARMIN PAPER PRODUCTS CO.	GREEN BAY	2/	2/	2/	2/	2/
SCOTT PAPER CO.	MARINETTE	50	50	0	0	0
SCOTT PAPER CO.	OCONTO FALLS	110	110	0	0	0
ST REGIS PAPER CO.	RHINELANDER	120	120	0	0	0
ST REGIS PAPER CO.	CORNELL	50	0	0	50	0
SUPERIOR FIBRE PRODUCTS CO.	SUPERIOR	180	0	0	180	0
THILMANY PULP AND PAPER CO	KAUKAUNA	400	0	400	0	0
TOMAHAWK PULP CO., INC.	TOMAHAWK	50	0	0	50	0
WAUSAU PAPER MILLS CO.	BROKAW	145	145	0	0	0
EVANS PRODUCTS CO.	PHILLIPS	100	0	0	100	0
TOTAL	25 PLANTS.....	4670	1375	1270	1210	815
ALL STATES	43 PLANTS	10115	1495	2955	3705	1960

1/ LOCKWOOD'S DIRECTORY OF THE PAPER AND ALLIED INDUSTRIES-1973,AND 1973 DIRECTORY OF THE FOREST PRODUCTS INDUSTRY.
2/ CAPCITY NOT AVAILABLE.

Table 4.--Production and imports of pulpwood, Central States, 1972

(In standard cords, unpeeled) [1/]

SPECIES AND DESTINATION	PRODUCTION BY STATES 2/					IMPORTS			TOTAL RECEIPTS
	ILLINOIS	INDIANA	IOWA	MISSOURI	REGIONAL TOTAL	LAKE STATES	OTHER U.S.	TOTAL IMPORTS	
SOFTWOODS									
ILLINOIS	400	263	0	1980	2643	0	0	0	2643
IND.,IOWA,MO. 3/	0	[illegible]	0	0	0	0	200	200	200
EXPORTED 4/	1338	384	0	608	2330	0	0	0	0
TOTAL	1738	647	0	2588	4973	0	200	200	2843
SOFT HARDWOODS									
ILLINOIS	26835	12363	111	3728	43037	2222	0	2222	45259
IND.,IOWA,MO. 3/	4049	10257	9951	17292	41549	6799	889	7688	49237
EXPORTED 4/	2027	9200	0	2430	13657	0	0	0	0
TOTAL	32911	31820	10062	23450	98243	9021	889	9910	94496
HARD HARDWOODS									
ILLINOIS	17198	1313	0	1140	19651	0	0	0	19651
IND.,IOWA,MO. 3/	4103	10205	20837	9449	44594	3880	968	4848	49442
EXPORTED 4/	2033	33085	0	14840	49958	0	0	0	0
TOTAL	23334	44603	20837	25429	114203	3880	968	4848	69093
TOTAL ROUNDWOOD									
ILLINOIS	44433	13939	111	6848	65331	2222	0	2222	67553
IND.,IOWA,MO. 3/	8152	20462	30788	26741	86143	10679	2057	12736	98879
EXPORTED 4/	5398	42669	0	17878	65945	0	0	0	0
TOTAL	57983	77070	30899	51467	217419	12901	2057	14958	166432
RESIDUE,SOFTWOOD									
ILLINOIS	6279	18	11482	881	18660	9408	5402	14810	33470
IND.,IOWA,MO. 3/	0	0	0	0	0	0	3752	3752	3752
TOTAL	6279	18	11482	881	18660	9408	9154	18562	37222
RESIDUE,HARDWOOD									
ILLINOIS	36068	282	1136	39112	76598	4474	1322	5796	82394
IND.,IOWA,MO. 3/	8388	36032	10072	4336	58828	4545	6465	11010	69838
EXPORTED 4/	30729	38490	1029	21686	91934	0	0	0	0
TOTAL	75185	74804	12237	65134	227360	9019	7787	16806	152232
ALL WOOD MATERIAL									
ILLINOIS	86780	14239	12729	46841	160589	16104	6724	22828	183417
IND.,IOWA,MO. 3/	16540	56494	40860	31077	144971	15224	12274	27498	172469
EXPORTED 4/	36127	81159	1029	39564	157879	0	0	0	0
TOTAL	139447	151892	54618	117482	463439	31328	18998	50326	355886

1/ FACTORS USED IN CONVERTING TO STANDARD GREEN CORDS (128 CU. FT.) WERE:
4,500 POUNDS OF SOFT HARDWOOD ROUNDWOOD;
5,000 POUNDS OF HARD HARDWOOD OR CONIFEROUS ROUNDWOOD;
4,100 POUNDS OF SOFTWOOD CHIPS (GREEN);
4,400 POUNDS OF HARDWOOD CHIPS (GREEN);
2,500 POUNDS OF CHIPS (ALL SPECIES,DRY).

2/ VERTICAL COLUMNS OF FIGURES UNDER BOX HEADING -PRODUCTION BY STATES- PRESENT THE AMOUNT OF PULPWOOD CUT IN EACH STATE.

3/ COMBINED TO PREVENT DISCLOSURE OF INDIVIDUAL MILL RECEIPTS.

4/ PULPWOOD SHIPPED TO MILLS OUTSIDE THE REGION.

Table 5.--Central States pulpwood production by state and destination, 1968-1972

(In thousand cords)

Year	Illinois			Indiana			Iowa			Missouri		
		Destination			Destination			Destination			Destination	
	Total	Central States	Other States	Total	Central States	Other States	Total	Central States	Other States	Total	Central States	Other States
1968	115	115	--	118	102	16	38	37	1	62	62	*
1969	132	128	4	132	107	25	31	30	1	81	71	10
1970	118	110	8	148	95	53	58	57	1	82	57	25
1971	133	99	34	139	77	62	53	52	1	97	62	35
1972	139	103	36	152	71	81	55	54	1	117	78	39

* Less than 500 cords.

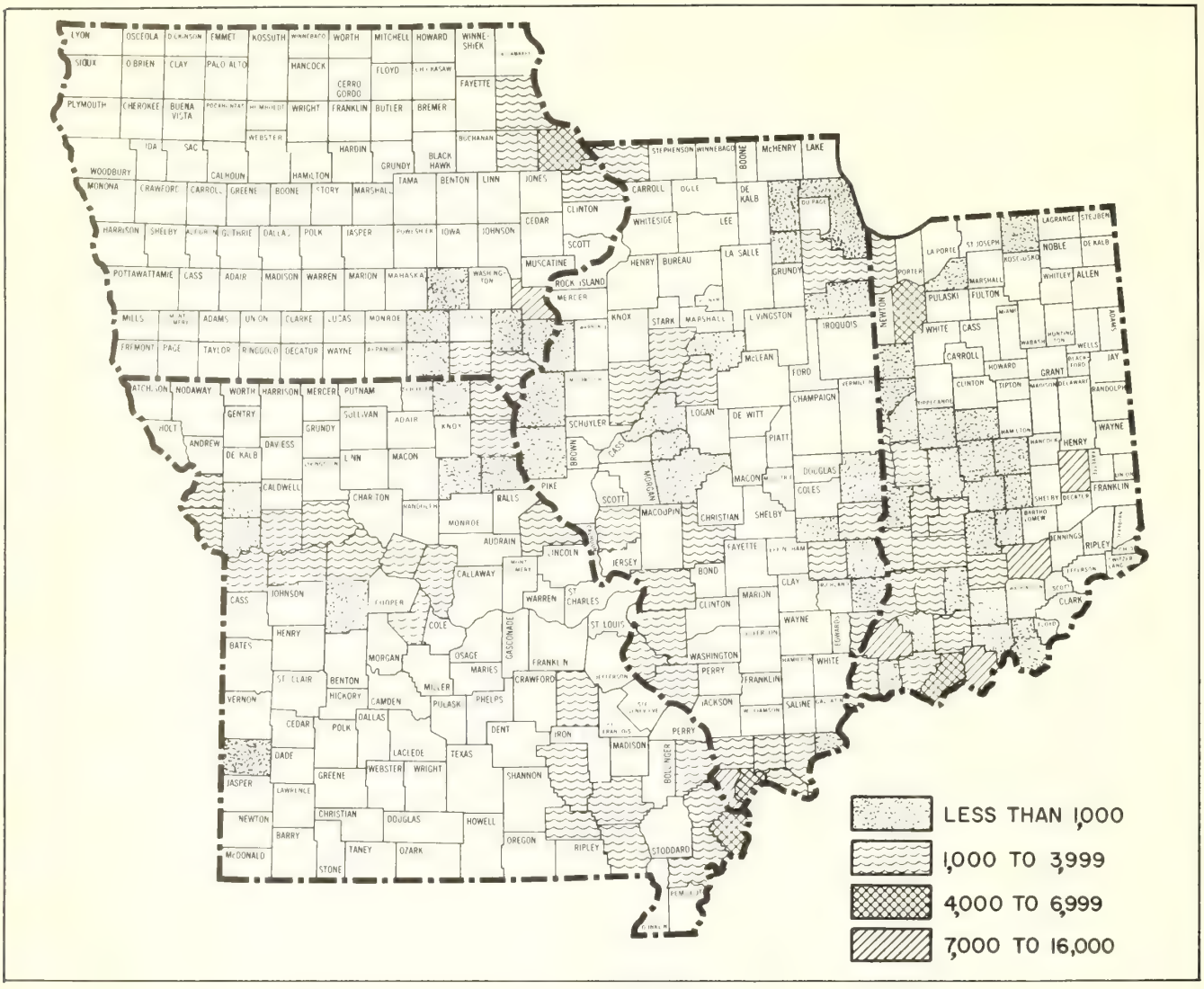


Figure 4.--Harvest of pulpwood bolts in the Central States, by counties, in standard cords, 1972.

Table 6.--Trends in receipts of roundwood and residue as pulpwood, Central States, 1968-1972

(In thousand cords, unpeeled)

Type of material and area	1968	1969	1970	1971	1972
Roundwood					
Illinois	68	50	62	57	67
Indiana, Iowa, Missouri	156	146	131	107	99
Total	224	196	193	164	166
Residue					
Illinois	92	135	100	107	116
Indiana, Iowa, Missouri	50	64	68	67	74
Total	142	199	168	174	190
All material	366	395	361	338	356

Table 7.--Active woodpulp mills in the Central States, by location, type of pulp produced, and capacity, 1972

COMPANY	LOCATION	MILL CAPACITY IN TONS PER 24 HOURS 1/				
		TOTAL	SULFITE	SULFATE	GROUNDWOOD AND OTHER MECHANICAL	SEMI-CHEMICAL
ILLINOIS:						
ALTON BOX BOARD CO.	ALTON	300	0	0	0	300
BIRD AND SON , INC.	CHICAGO	40	0	0	40	0
CELOTEX CORP.	PEORIA	190	0	0	190	0
CERTAIN-TEED PRODUCTS CORP.	EAST ST LOUIS	100	0	0	100	0
FLINTKOTE CO , THE	MT CARMEL	40	0	0	40	0
GAF CORP.	JOLIET	100	0	0	100	0
JOHNS-MANVILLE PRODUCTS CORP.	WAUKEGAN	65	0	0	65	0
CELOTEX CORP.	WILMINGTON	30	0	0	30	0
TOTAL.....	8 PLANTS.....	865	0	0	565	300
INDIANA :						
WESTON PAPER AND MFG. CO.	TERRE HAUTE	270	0	0	0	270
TOTAL.....	1 PLANT.....	270	0	0	0	270
IOWA :						
CELOTEX CORP.	DUBUQUE	90	0	0	0	90
CONSOLIDATED PACKAGING CORP.	FORT MADISON	140	0	0	0	140
TOTAL.....	2 PLANTS.....	230	0	0	0	230
MISSOURI :						
GAF CORP.	KANSAS CITY	90	0	0	90	0
HUEBERT FIBREBOARD, INC.	BOONEVILLE	60	0	0	60	0
TOTAL.....	2 PLANTS.....	150	0	0	150	0
ALL STATES	13 PLANTS	1515	0	0	715	800

1/ LOCKWOOD S DIRECTORY OF THE PAPER AND ALLIED INDUSTRIES-1973,AND 1973 DIRECTORY OF THE FOREST PRODUCTS INDUSTRY.
2/ CAPCITY NOT AVAILABLE.

APPENDIX

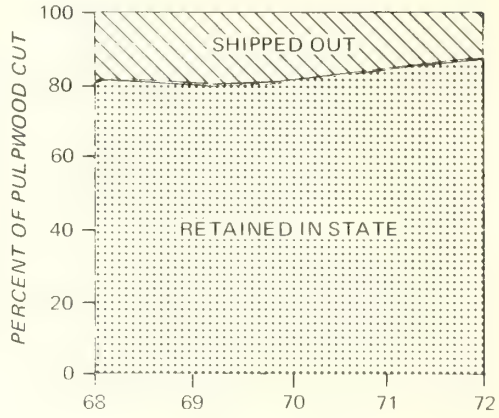
Table 8.--Lake States pulpwood production, by state of origin and destination, 1968-1972

(In thousand standard cords)

MINNESOTA

Year	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1968	1,087	900	166	*	21
1969	1,192	977	188	--	27
1970	1,224	981	219	*	24
1971	1,196	992	188	*	16
1972	1,354	1,168	166	--	20
5-year average	1,211	1,004	185	*	22

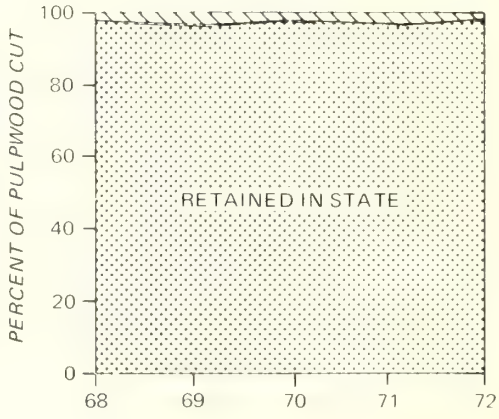
* Less than 500 cords.



MICHIGAN

Year	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1968	1,168	--	455	702	11
1969	1,302	--	537	752	13
1970	1,406	--	610	785	11
1971	1,267	--	567	688	12
1972	1,401	--	470	917	14
5-year average	1,309	--	528	769	12

* Less than 500 cords.



WISCONSIN

Year	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1968	1,297	22	1,259	4	12
1969	1,450	17	1,412	9	12
1970	1,656	11	1,627	10	8
1971	1,552	35	1,502	*	15
1972	1,537	28	1,493	2	14
5-year average	1,498	23	1,458	5	12

* Less than 500 cords.

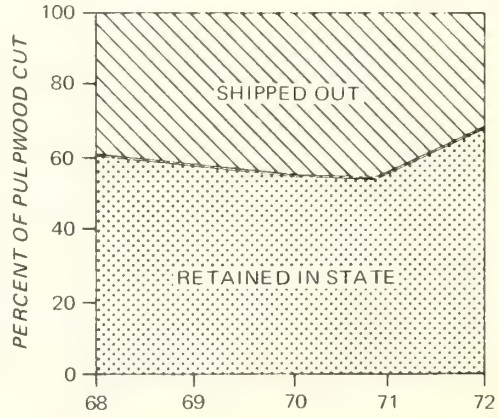


Table 9.--Lake States pulpwood production, by Forest Survey Unit and destination by state, 1972

(In hundred standard cords, roughwood basis)

MICHIGAN

UNIT	TOTAL CUT	DESTINATION OF PULPWOOD			
		MICHIGAN	MINNESOTA	WISCONSIN	OTHER
E.1/2 UP. PENINSULA	3440	1414	0	1911	115
W.1/2 UP. PENINSULA	4602	1794	0	2785	23
N.1/2 LOW. PENINSULA	5385	5383	0	0	2
S.1/2 LOW. PENINSULA	581	581	0	0	0
TOTAL	14008	9172	0	4696	140

MINNESOTA

UNIT	TOTAL CUT	DESTINATION OF PULPWOOD			
		MICHIGAN	MINNESOTA	WISCONSIN	OTHER
NORTHEASTERN	4916	0	3981	887	48
CENTRAL PINE	4652	0	3908	700	44
RAINY RIVER	3252	0	3090	59	103
SOUTHEASTERN	582	0	577	5	0
WESTERN PRAIRIE	135	0	124	11	0
TOTAL	13537	0	11680	1662	195

WISCONSIN

UNIT	TOTAL CUT	DESTINATION OF PULPWOOD			
		MICHIGAN	MINNESOTA	WISCONSIN	OTHER
NORTHEASTERN	6550	26	0	6520	4
NORTHWESTERN	5796	0	220	5563	13
CENTRAL	2470	0	15	2455	0
SOUTHWESTERN	357	0	46	198	113
SOUTHEASTERN	201	0	0	193	8
TOTAL	15374	26	281	14929	138

Table 10.--Lake States pulpwood production by species, state, and Survey Unit, 1968-1972

(In thousand standard cords, roughwood basis)

MINNESOTA

Unit	ASPEN Annual production					BALSAM FIR Annual production				
	1968	1969	1970	1971	1972	1968	1969	1970	1971	1972
Northeastern	203	204	208	205	241	12	10	9	9	9
Central Pine	218	289	249	246	260	18	18	22	20	26
Rainy River	131	148	127	135	160	13	12	14	11	31
Southeastern	3	5	11	20	25	*	--	*	--	--
Western Prairie	28	14	5	2	3	--	--	--	--	--
Total	583	660	600	608	689	43	40	45	40	66

WISCONSIN

Northeastern	369	416	430	402	349	25	28	40	35	25
Northwestern	202	244	296	302	311	22	22	29	19	23
Central	55	35	44	31	23	4	*	*	*	1
Southwestern	1	*	*	--	1	--	--	--	--	--
Southeastern	2	2	1	1	*	--	--	--	--	--
Total	629	697	771	736	684	51	50	69	54	49

MICHIGAN

E. 1/2 Upper Peninsula	95	119	124	125	89	39	27	41	26	33
W. 1/2 Upper Peninsula	167	184	180	177	188	22	16	25	25	24
N. 1/2 Lower Peninsula	274	296	288	242	241	1	1	*	1	3
S. 1/2 Lower Peninsula	5	7	4	3	11	--	--	--	--	--
Total	541	606	596	547	529	62	44	66	52	60
LAKE STATES	1,753	1,963	1,967	1,891	1,902	156	134	180	146	175

*Less than 500 cords.

(Continued on next page)

MINNESOTA

Unit	BIRCH					HEMLOCK				
	Annual production					Annual production				
	1968	1969	1970	1971	1972	1968	1969	1970	1971	1972
Northeastern	*	3	17	8	15	--	--	--	--	--
Central Pine	1	*	12	26	26	--	--	--	--	--
Rainy River	--	--	2	1	1	--	--	--	--	--
Southeastern	--	--	--	*	*	--	--	--	--	--
Western Prairie	--	--	*	--	--	--	--	--	--	--
Total	1	3	31	35	42	--	--	--	--	--
WISCONSIN										
Northeastern	18	23	32	22	20	22	32	33	28	26
Northwestern	35	37	42	28	26	18	16	16	13	13
Central	3	3	2	1	*	4	3	3	1	2
Southwestern	--	--	--	--	1	--	--	--	--	--
Southeastern	*	--	--	--	--	*	--	--	--	--
Total	56	63	76	51	47	44	51	52	42	41
MICHIGAN										
E. 1/2 Upper Peninsula	2	1	4	1	10	9	11	17	8	17
W. 1/2 Upper Peninsula	*	1	2	3	7	36	52	52	34	33
N. 1/2 Lower Peninsula	11	21	27	19	19	--	*	*	*	--
S. 1/2 Lower Peninsula	--	*	--	--	--	--	--	--	--	--
Total	13	23	33	23	36	45	63	69	42	50
LAKE STATES	70	89	140	109	125	89	114	121	84	91

* Less than 500 cords.

MINNESOTA

Unit	JACK PINE 1/					SPRUCE				
	Annual production					Annual production				
	1968	1969	1970	1971	1972	1968	1969	1970	1971	1972
Northeastern	121	133	123	119	121	66	66	64	64	76
Central Pine	62	74	68	57	66	31	27	31	29	35
Rainy River	12	18	19	26	19	60	60	85	74	80
Southeastern	--	*	1	*	1	--	*	*	--	--
Western Prairie	8	12	10	12	9	--	1	1	1	1
Total	203	237	221	214	216	157	154	181	168	192
WISCONSIN										
Northeastern	46	63	72	68	53	7	10	12	9	9
Northwestern	57	77	96	105	99	3	3	4	3	4
Central	94	75	87	93	90	1	*	*	*	*
Southwestern	1	*	2	1	2	--	--	--	--	--
Southeastern	1	1	2	1	2	--	--	--	--	--
Total	199	216	259	268	246	11	13	16	12	13
MICHIGAN										
E. 1/2 Upper Peninsula	39	59	57	80	84	23	20	29	22	20
W. 1/2 Upper Peninsula	33	38	34	41	37	16	18	22	22	18
N. 1/2 Lower Peninsula	131	109	145	110	102	*	1	*	1	--
S. 1/2 Lower Peninsula	2	1	4	4	5	--	--	--	--	--
Total	205	207	240	235	228	39	39	51	45	38
LAKE STATES	607	660	720	717	690	207	206	248	225	243

* Less than 500 cords

(Continued on next page)

1/ Includes small quantity of red and white pine.

MINNESOTA

Unit	TAMARACK Annual production					MISCELLANEOUS HARDWOODS Annual production				
	1968	1969	1970	1971	1972	1968	1969	1970	1971	1972
Northeastern	4	4	5	4	4	7	11	14	12	11
Central Pine	16	14	23	22	19	5	11	3	*	1
Rainy River	4	2	7	5	8	9	8	9	9	18
Southeastern	*	--	--	--	--	1	1	1	9	--
Western Prairie	1	1	1	1	*	1	1	--	--	--
Total	25	21	36	32	31	23	32	27	30	30
WISCONSIN										
Northeastern	3	1	2	2	2	60	87	110	105	128
Northwestern	2	1	2	1	1	50	61	79	67	84
Central	*	*	*	*	*	68	81	99	89	111
Southwestern	--	--	--	--	--	4	5	4	5	5
Southeastern	--	--	--	--	--	3	4	4	3	5
Total	5	2	4	3	3	185	238	296	269	333
MICHIGAN										
E. 1/2 Upper Peninsula	1	1	2	1	2	3	10	18	14	50
W. 1/2 Upper Peninsula	1	1	1	2	1	48	38	28	41	97
N. 1/2 Lower Peninsula	--	--	--	--	--	116	141	143	136	153
S. 1/2 Lower Peninsula	--	--	--	--	--	4	7	7	6	9
Total	2	2	3	3	3	171	196	196	197	309
LAKE STATES	32	25	43	38	37	379	466	519	496	672

* Less than 500 cords.

MINNESOTA

Unit	RESIDUE Annual production					ALL SPECIES[1] Annual production				
	1968	1969	1970	1971	1972	1968	1969	1970	1971	1972
Northeastern	8	6	12	12	15	421	437	452	433	492
Central Pine	12	4	28	26	33	363	437	436	426	466
Rainy River	11	5	5	8	8	240	253	268	269	325
Southeastern	21	30	38	23	32	25	36	51	52	58
Western Prairie	--	--	--	--	--	38	29	17	16	13
Total	52	45	83	69	88	1,087	1,192	1,224	1,196	1,354
WISCONSIN										
Northeastern	53	49	43	42	43	603	709	774	713	655
Northwestern	21	17	17	17	18	410	478	581	555	579
Central	16	16	20	24	20	245	213	255	239	247
Southwestern	16	27	24	26	27	22	32	30	32	36
Southeastern	11	11	9	8	13	17	18	16	13	20
Total	117	120	113	117	121	1,297	1,450	1,656	1,552	1,537
MICHIGAN										
E. 1/2 Upper Peninsula	2	29	37	40	36	213	277	329	317	344
W. 1/2 Upper Peninsula	34	54	63	36	54	357	402	407	381	460
N. 1/2 Lower Peninsula	16	6	12	12	20	549	575	615	521	538
S. 1/2 Lower Peninsula	38	33	40	35	33	49	48	55	48	58
Total	90	122	152	123	143	1,168	1,302	1,406	1,267	1,400
LAKE STATES	259	287	348	309	352	3,552	3,944	4,286	4,015	4,291

1/ Including residues and small quantity of cedar not shown in other parts of table.

Table 11.--Lake States pulpwood production by county and species, 1972

(In hundred standard cords, roughwood basis)

UNIT 1/ AND COUNTY	ALL SPECIES	ASPEN	BALSAM	BIRCH	HEM-LOCK	PINE	SPRUCE	TAM-ARACK	MISC. HDWDS.	CEDAR	2/ RESIDUES
E.1/2 UP. PENINSULA											
ALGER	314	27	26	17	25	110	13	3	89	4	
CHIPPEWA	315	15	31	5	18	176	25	2	40	3	
DELTA	721	220	99	29	41	154	48	3	124	3	
LUCE	351	17	32	10	27	169	38	3	50	5	
MACKINAC	227	24	18	14	12	64	13	1	79	2	
MENOMINEE	736	501	78	13	24	16	35	4	63	2	
SCHOOLCRAFT	411	87	48	14	21	149	33	2	54	3	
TOTAL	3439	891	332	102	168	838	205	18	499	22	364
W.1/2 UP. PENINSULA											
BARAGA	624	301	16	18	46	93	25	3	118	4	
DICKINSON	779	575	49	8	38	21	40	3	43	2	
GOGEBIC	336	120	22	2	98	20	3	0	71	0	
HOUGHTON	236	144	5	3	24	7	7	R	46	R	
IRON	762	398	69	4	43	24	37	1	186	R	
KEWEENAW	11	0	6	0	0	0	5	0	0	0	
MARQUETTE	744	181	74	27	52	203	60	6	133	8	
ONTONAGON	570	156	2	7	29	2	2	R	372	R	
TOTAL	4601	1875	243	69	330	370	179	13	969	14	539
N.1/2 LOW. PENINSULA											
ALCONA	440	263	1	27	0	22	0	0	127	0	
ALPENA	151	77	9	12	0	15	0	0	38	0	
ANTRIM	2	0	0	0	0	2	0	0	0	0	
ARENAC	3	3	0	R	0	0	0	0	R	0	
BENZIE	108	64	0	7	0	1	0	0	36	0	
CHEBOYGAN	141	93	R	17	0	4	0	0	27	0	
CLARE	163	113	0	10	0	3	0	0	37	0	
CRAWFORD	149	16	R	0	0	122	0	0	11	0	
GLADWIN	49	20	0	1	0	19	0	0	9	0	
GRAND TRAVERSE	146	79	0	8	0	16	0	0	43	0	
IOSCO	181	12	0	1	0	162	0	0	6	0	
ISABELLA	22	19	0	0	0	0	0	0	3	0	
KALKASKA	101	41	R	3	0	42	0	0	15	0	
LAKE	380	85	0	2	0	93	0	0	200	0	
LEELANAU	52	32	0	4	0	0	0	0	16	0	
MANISTEE	222	85	0	5	0	22	0	0	110	0	
MASON	182	74	0	5	0	33	0	0	70	0	
MECOSTA	89	43	0	R	0	9	0	0	37	0	
MIDLAND	34	32	0	0	0	0	0	0	2	0	
MISSAUKEE	125	73	0	6	0	10	0	0	36	0	
MONTMORENCY	279	178	2	10	0	15	0	0	74	0	
NEWAYGO	284	117	0	4	0	26	0	0	137	0	
OCEANA	116	29	0	1	0	6	0	0	80	0	
OGEMAW	155	50	1	3	0	80	0	0	21	0	
OSCEOLA	361	230	0	12	0	10	0	0	109	0	
OSCODA	391	184	0	15	0	85	0	0	107	0	
OTSEGO	51	31	0	1	0	9	0	0	10	0	
PRESQUE ISLE	211	124	11	26	0	30	0	0	20	0	
ROSCOMMON	348	151	5	4	0	79	0	0	109	0	
WEXFORD	248	91	0	6	0	108	0	0	43	0	
TOTAL	5381	2409	29	190	0	1023	0	0	1533	0	197
S.1/2 LOW. PENINSULA											
ALLEGAN	20	6	0	0	0	3	0	0	11	0	
BARRY	0	0	0	0	0	0	0	0	R	0	
BERRIEN	1	R	0	0	0	0	0	0	1	0	
CASS	11	1	0	0	0	9	0	0	1	0	
GRATIOT	12	9	0	0	0	R	0	0	3	0	
IONIA	13	11	0	0	0	0	0	0	2	0	
KENT	1	0	0	0	0	R	0	0	1	0	
MONTCALM	59	47	0	0	0	4	0	0	8	0	
MUSKEGON	127	38	0	0	0	34	0	0	55	0	
OTTAWA	1	R	0	0	0	1	0	0	0	0	
SAGINAW	7	3	0	0	0	0	0	0	4	0	
ST. JOSEPH	1	1	0	0	0	0	0	0	R	0	
VAN BUREN	1	1	0	0	0	0	0	0	R	0	
TOTAL	581	117	0	0	0	51	0	0	86	0	327
STATE TOTAL	14002	5292	604	361	498	2282	384	31	3087	36	1427

(CONTINUED ON NEXT PAGE)

1/ INCLUDES ONLY THOSE COUNTIES THAT SUPPLIED PULPWOOD IN 1972.
2/ COUNTY FIGURES ARE NOT AVAILABLE.
R=LESS THAN 50 CORDS.

UNIT AND COUNTY 1/	ALL SPECIES	ASPEN	BALSAM	BIRCH	HEMLOCK	PINE	SPRUCE	TAMARACK	MISC. HDWDS.	CEDAR	2/ RESIDUES
NORTHEASTERN											
CARLTON	372	304	8	41	0	4	12	3	0	0	
COOK	368	45	8	0	0	41	274	0	R	0	
LAKE	709	247	4	21	0	251	186	0	0	0	
PINE	273	262	0	2	0	9	0	0	0	0	
ST.LOUIS	3046	1552	71	82	0	899	286	39	117	0	
TOTAL	4915	2410	91	146	0	1204	758	42	117	0	147
CENTRAL PINE											
AITKIN	361	267	16	25	0	6	20	27	0	0	
BECKER	6	2	2	0	0	1	1	0	0	0	
BELTRAMI	1081	605	74	104	0	163	87	44	4	0	
CASS	646	450	12	33	0	122	11	18	0	0	
CLEARWATER	400	318	2	8	0	21	20	31	0	0	
CROW WING	124	35	0	4	0	85	0	R	0	0	
HUBBARD	265	163	2	2	0	84	2	12	0	0	
ITASCA	1385	752	152	86	0	130	208	53	4	0	
WADENA	60	8	0	2	0	50	0	0	0	0	
TOTAL	4655	2600	260	264	0	662	349	185	8	0	327
RAINY RIVER											
KOOCHICHING	2946	1584	302	12	0	161	638	74	175	0	
LAKE OF THE WOODS	222	18	1	0	0	32	164	6	1	0	
TOTAL	3253	1602	303	12	0	193	802	80	176	0	85
SOUTHEASTERN											
KANABEC	25	25	0	0	0	0	0	0	0	0	
MILLE LACS	196	196	0	0	0	0	0	0	0	0	
MORRISON	37	31	0	2	0	4	0	0	0	0	
SCOTT	1	1	0	0	0	0	0	0	0	0	
TODD	2	0	0	0	0	2	0	0	0	0	
TOTAL	582	253	0	2	0	6	0	0	0	0	321
WESTERN PRAIRIE											
MAHNOMEN	5	5	0	0	0	0	0	R	0	0	
POLK	6	0	0	0	0	0	1	5	0	0	
ROSEAU	123	20	0	0	0	94	R	R	0	0	
TOTAL	134	25	0	0	0	94	10	5	0	0	0
STATE TOTAL	13539	6890	654	424	0	2159	1919	312	301	0	880

(CONTINUED ON NEXT PAGE)

1/ INCLUDES ONLY THOSE COUNTIES THAT SUPPLIED PULPWOOD IN 1972.
2/ COUNTY FIGURES ARE NOT AVAILABLE.
R=LESS THAN 50 CORDS.

UNIT AND COUNTY 1/	ALL SPECIES	ASPEN	BALSAM	BIRCH	HEM-LOCK	PINE	SPRUCE	TAM-ARACK	MISC. HDWDS.	CEDAR	2/ RESIDUES
NORTHEASTERN											
FLORENCE	423	313	R	4	19	R	4	1	66	0	
FOREST	762	398	70	6	64	24	15	R	185	0	
LANGLADE	711	473	10	14	3	4	1	5	201	0	
LINCOLN	796	484	21	23	21	49	7	1	190	0	
MARINETTE	947	593	48	5	6	135	21	1	138	0	
OCONTO	313	227	5	1	6	34	1	0	39	0	
ONEIDA	1210	587	68	83	24	154	27	R	259	0	
SHAWANO 3/	303	139	2	R	105	12	1	R	44	0	
VILAS	659	270	24	67	14	113	13	2	156	0	
TOTAL	6551	3484	256	203	262	533	90	18	1278	0	427
NORTHWESTERN											
ASHLAND	624	295	80	33	25	42	12	2	135	0	
BARRON	11	R	0	1	0	0	0	0	10	0	
BAYFIELD	746	428	22	41	10	201	1	0	43	0	
BURNETT	300	100	0	2	0	198	0	0	0	0	
DOUGLAS	849	550	1	4	3	268	4	1	18	0	
IRON	823	695	19	22	20	10	6	R	51	0	
POLK	29	R	0	0	0	29	0	0	R	0	
PRICE	950	580	55	67	19	47	8	1	173	0	
RUSK	100	36	R	7	1	R	0	0	56	0	
SAWYER	389	115	41	59	15	32	4	1	122	0	
TAYLOR	520	232	10	17	34	11	2	R	214	0	
WASHBURN	270	82	1	4	0	157	1	2	23	0	
TOTAL	5795	3113	229	257	127	995	38	7	845	0	184
CENTRAL											
ADAMS	317	3	0	0	0	184	0	0	130	0	
CHIPPEWA	51	21	R	1	6	1	0	R	22	0	
CLARK	199	34	1	R	1	51	0	0	112	0	
EAU CLAIRE	31	3	0	0	0	28	0	0	0	0	
JACKSON	212	1	0	0	0	197	0	0	14	0	
JUNEAU	266	2	0	R	0	144	0	0	120	0	
MARATHON	451	121	2	1	15	12	1	R	299	0	
MARQUETTE	91	0	0	0	0	11	0	0	80	0	
MONROE	57	1	0	0	0	51	0	0	5	0	
PORTAGE	170	18	R	0	1	66	R	R	85	0	
WAUPACA	45	15	1	0	1	1	R	1	26	0	
WAUSHARA	63	R	0	0	R	35	0	0	28	0	
WOOD	318	13	R	R	1	114	0	R	190	0	
TOTAL	2471	232	4	2	25	895	1	1	1111	0	200
SOUTHWESTERN											
BUFFALO	0	0	0	0	0	R	0	0	0	0	
DUNN	7	0	0	0	0	7	0	0	0	0	
GRANT	67	13	0	7	0	R	0	0	47	0	
LACROSSE	2	0	0	0	0	2	0	0	0	0	
PEPIN	7	0	0	0	0	7	0	0	0	0	
RICHLAND	1	0	0	0	0	1	0	0	0	0	
SAUK	0	0	0	0	0	R	0	0	0	0	
TREMPEALEAU	7	0	0	0	0	7	0	0	0	0	
TOTAL	357	13	0	7	0	24	0	0	47	0	266
SOUTHEASTERN											
BROWN	9	2	R	0	R	1	0	0	6	0	
COLUMBIA	56	0	0	0	0	13	0	0	43	0	
FOND DU LAC	0	R	0	0	0	0	0	0	0	0	
GREEN LAKE	0	0	0	0	0	R	0	0	0	0	
OUTAGAMIE	1	0	0	0	0	0	0	0	1	0	
WASHINGTON	0	0	0	0	0	0	0	0	R	0	
TOTAL	200	2	0	0	0	14	0	0	50	0	134
STATE TOTAL	15374	6844	489	469	414	2461	129	26	3331	0	1211

1/ INCLUDES ONLY THOSE COUNTIES THAT SUPPLIED PULPWOOD IN 1972.
2/ COUNTY FIGURES ARE NOT AVAILABLE.
3/ INCLUDES MENOMINEE COUNTY.
R=LESS THAN 50 CORDS.

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NORTH CENTRAL FOREST EXPERIMENT STATION
50
YEARS
1923
1973

US D A FOREST SERVICE
RESOURCE BULLETIN NC-19
1974

TIMBER RESOURCE OF MISSOURI'S
eastern ozarks

burton l. essex and john s. spencer, jr.

NORTH CENTRAL FOREST EXPERIMENT STATION
FOREST SERVICE• U.S. DEPARTMENT OF AGRICULTURE

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FOREWORD

Forest Survey is a continuing endeavor as mandated by the McSweeney-McNary Forest Research Act of 1928. Its objective is to inventory periodically the Nation's forest lands to determine their extent, condition, and volumes of timber, growth, and depletions. This kind of up-to-date information is essential to frame intelligent forest policies and programs. USDA Forest Service regional experiment stations are charged with the responsibility for conducting these inventories and publishing summary reports for individual States. The North Central Forest Experiment Station is responsible for Forest Survey work done in Michigan, Wisconsin, Minnesota, North Dakota, eastern South Dakota, Nebraska, Iowa, Illinois, Indiana, Missouri, and Kansas.

Fieldwork for the 1972 Missouri Forest Survey was started in January 1970 and was completed in May 1973. Reports on the two previous surveys of Missouri's timber resource are dated 1947 and 1959. These earlier reports provide a basis for comparison with the information in this report for those interested in trends that have developed over the past quarter century.

Similar Resource Bulletins reporting statistical highlights and detailed tables on the timber resource of the other Survey Units in Missouri (see cover) are in preparation. These will provide the basis for a comprehensive analysis of the timber resource of the entire State which will be published as a separate report.

A higher degree of accuracy of survey information was obtained during the 1972 survey than otherwise would have been feasible because of intensified field sampling made possible by extra funding provided the North Central Station by the State Legislature through the Missouri Department of Conservation. The Department also conducted a canvass of primary wood-using plants in the State, which was used to help in estimating the quantity of timber products harvested in Missouri.

Personnel from the National Forests in Missouri installed sample plots on national forest lands, which were used to inventory those lands. The USDA Agricultural Stabilization and Conservation Service and the State Historical Society of Missouri furnished aerial photos used in the survey.

N O T E

• References to information concerning growth, mortality, and removals are dated 1971, but information concerning forest area and timber inventory incorporate changes that occurred during calendar year 1971; therefore, they represent conditions as of January 1, 1972 and are dated 1972.

• Many of the terms used in this Resource Bulletin have specialized meanings, which are defined in "Glossary of Terms used in Resource Bulletins Reporting Missouri's 1972 Timber Resource." Copies of this Glossary can be obtained from the North Central Forest Experiment Station.

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TIMBER RESOURCE OF MISSOURI'S EASTERN OZARKS, 1972

Burton L. Essex and John S. Spencer, Jr.

HIGHLIGHTS 1/

Forest Area

Forest land occupies 4.2 million acres (69 percent of the Unit's land area) as compared to 4.4 million acres (71 percent) in 1959.

Of this, 4.1 million acres were classified as commercial forest as compared to 4.3 million acres in 1959.

Shannon County contains the Unit's largest area of commercial forest (477 thousand acres) followed by Reynolds County (423 thousand acres) and Washington County (355 thousand acres).

Farmers, private individuals, and corporations not directly engaged in timber processing own two-thirds of the commercial forest.

The black and scarlet oak type dominated the commercial forest in 1972--1.9 million acres as compared to 2.2 million acres in 1959 in the type.

Poletimber stands constitute the largest stand-size class--48 percent of the commercial forest area.

Timber Volume

Volume of growing stock on commercial forest land was 2.2 billion cubic feet in 1972 as compared to 1.7 billion cubic feet in 1959.

Sawtimber volume increased from 3.5 billion board feet in 1959 to 5.3 billion board feet in 1972.

The oaks alone account for three-fourths of the 1972 growing-stock volume.

Average volume per acre of growing stock is 417 cubic feet (5.3 cords).

Farmers, private individuals, and corporations not directly engaged in timber processing own 61 percent of the growing-stock volume.

Volume in rough and rotten trees that are alive is 766 million cubic feet, most in rough trees.

Stand Conditions

Net annual growth on growing-stock trees was 71 million cubic feet (903 thousand cords) in 1971.

Net annual growth rate of growing stock was 3.2 percent of inventory volume.

Mortality of growing-stock trees amounted to 3 million cubic feet (41 thousand cords) in 1971.

Seventy-four percent of the commercial forest area is capable of growing trees 50 feet and taller at age 50, but only 17 percent is capable of growing

---

1/ Published 1959 statistics have been adjusted to be comparable with 1972 data because of changed definitions and procedures used during the two surveys.

trees 70 feet and taller at the same age.

Fifty-seven percent of the commercial forest includes stands younger than 50 years old.

Forty-six percent of the commercial forest is medium stocked or better with growing-stock trees. Only 3.4 percent is classified as nonstocked with these trees. (See glossary for nonstocked areas, page 2.)

Timber Use

Timber removals from growing stock in 1971 amounted to 41 million cubic feet (518 thousand cords)--about 60 percent of the volume of net annual growth. (See glossary for timber removals, page 5).

Total timber products output in 1969 was 55 million cubic feet, 34 million cubic feet of which was in saw logs.

Volume of wood residues from primary plants in 1969 totaled 13 million cubic feet, of which 9 million cubic feet are not utilized.2/

Allowable Cut

For the years 1972 through 1981, annual allowable cut from growing stock on commercial forests is estimated to average 57 million cubic feet (717 thousand cords)--47 million cubic feet from harvest cuttings and 10 million cubic feet from thinnings.

For the same years, annual allowable cut from rough and rotten trees is estimated to average 22 million cubic feet (272 thousand cords).

2/ Primary plants are those using logs and bolts or chips, shavings, etc., from logs and bolts.

TABLES

Area:

1. Area of land by land class, 1959 and 1972.

2. Area of land and forest land, by county.

3. Area of commercial forest land for Missouri's Eastern Ozarks Survey Unit and for individual counties within Unit, by forest type and stand-size class.

4. Area of commercial forest land, by county and ownership class.

5. Area of commercial forest land, by stand-volume and ownership class.

6. Area of commercial forest land, by area-condition and ownership class.

7. Area of commercial forest land, by site and ownership class.

8. Area of commercial forest land, by forest type and ownership class.

9. Area of commercial forest land, by forest type and stand-age class.

10. Area of commercial forest land, by forest type and site index class.

11. Area of commercial forest land, by forest type and basal area class.

12. Area of commercial forest land, by forest type, stand-size, and site class.

13. Area of commercial forest land, by stocking class based on selected stand components.

14. Area of commercial forest land, by stocking class of growing-stock trees and stand-size class.

15. Area of noncommercial forest land, by ownership class.

16. Area of noncommercial forest land, by forest type.

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17. Number of all live trees on commercial forest land, by species and diameter class.

18. Number of growing-stock trees on commercial forest land, by species and diameter class.

19. Number of short-log trees on commercial forest land, by species and diameter class.

Volume:

20. Net volume of growing stock and sawtimber on commercial forest land by species, 1959 and 1972.

21. Net volume on commercial forest land for Missouri's Eastern Ozarks Survey Unit and for individual counties within Unit, by species and kind of material.

22. Net volume of timber on commercial forest land, by class of timber, and softwoods and hardwoods.

23. Net volume of growing-stock, sawtimber, and rough and rotten trees on commercial forest land, by individual species.

24. Net volume of growing stock and sawtimber on commercial forest land, by ownership class and species group.

25. Net volume of growing stock on commercial forest land, by species and diameter class.

26. Net volume of sawtimber on commercial forest land, by species and diameter class.

27. Net volume of growing stock on commercial forest land, by species and forest type.

28. Net volume of sawtimber on commercial forest land, by species and forest type.

29. Net volume of timber in cull trees on commercial forest land, by species and cull tree class.

30. Net volume of short-log trees on commercial forest land, by species and diameter class.

31. Net volume of sawtimber on commercial forest land, by species and log grade class.

32. Walnut volume on nonforest land, by diameter class and class of timber.

Growth and Removals:

33. Net annual growth of growing stock and sawtimber on commercial forest land, by species and county.

34. Timber removals from growing stock and sawtimber on commercial forest land, by item and species group.

35. Timber removals from growing stock and sawtimber on commercial forest land, by species and county.

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36. Annual mortality of growing stock and sawtimber on commercial forest land, by cause and softwoods and hardwoods.

37. Annual mortality of growing stock and sawtimber on commercial forest land, by species.

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38. Output of timber products, by source of material and softwoods and hardwoods.

39. Forest products harvested, by ownership class and product.

40. Volume of primary plant residue, by kind of material and type of use.

41. Timber products output from roundwood, by species and product.

Annual Allowable Cut:

42. Average annual allowable cut for 1972-1981 from harvest cuttings and thinnings on commercial forest land, by species and kind of material.

43. Average annual allowable cut of growing stock for 1972-1981, from harvest cuttings and thinnings on commercial forest land, by species and forest type.

44. Average annual allowable cut of growing stock for 1972-1981, from harvest cuttings and thinnings on commercial forest land, by species and stand-volume class.

45. Average annual allowable cut for 1972-1981, by harvest cuttings of growing stock on commercial forest land, by species and stand-volume class.

46. Average annual allowable cut for 1972-1981, by thinnings of growing stock on commercial forest land, by species and stand-volume class.

47. Average annual allowable cut of sawtimber for 1972-1981, from harvest cuttings and thinnings on commercial forest land, by species and forest type.

48. Average annual allowable cut of sawtimber for 1972-1981, from harvest cuttings and thinnings on commercial forest land, by species and stand-volume class.

49. Average annual allowable cut for 1972-1981, by harvest cuttings of sawtimber on commercial forest land, by species and stand-volume class.

50. Average annual allowable cut for 1972-1981, by thinnings of sawtimber on commercial forest land, by species and stand-volume class.

51. Area of allowable cut for 1972-1981, by harvest cuttings on commercial forest land, by forest type and stand-age class.

52. Area of allowable cut by thinnings on commercial forest land for 1972-1981, by forest type and stand-age class.

Text Tables:

53. Sampling errors for estimates smaller than unit totals of volume, net growth, and removals, and area of commercial forest land.

54. Forest type, site index, and rotation age by management objective, used in calculation of annual allowable cut, Missouri.

Table 1.--*Area of land by land class, Eastern Ozarks, Missouri, 1959 and 1972*

(Thousand acres)

Land class	1959[1/]	1972
Commercial forest land:		
Shortleaf pine type	232.40	98.20
Eastern redcedar type	24.39	12.40
Eastern redcedar-hardwood type	18.46	20.40
Shortleaf pine-oak type	436.79	211.70
Post-blackjack oak type	540.81	709.40
Black-scarlet oak type	2,216.79	1,896.00
White oak type	389.48	836.60
Oak-gum-cypress type	65.22	13.70
Elm-ash-cottonwood type	106.06	78.50
Maple-beech type	36.16	67.60
Nonstocked	192.80	139.50
Subtotal	4,259.36	4,084.00
Noncommercial forest land:		
Unproductive	71.95	63.30
Productive-reserved	26.50	97.30
Subtotal	98.45	160.60
Nonforest land	1,791.99	1,918.30
Total	6,149.80	6,162.90

1/ Figures have been adjusted from those published previously for 1959 to conform to 1972 land classes because of changes in survey definitions and procedures.

Table 2.--*Area of land and forest land, by county, Eastern Ozarks, Missouri, 1972*

County	Land area	Forest land			Commercial forest as a percent of land area
		All forest	Noncommercial	Commercial	
	Thousand acres				Percent
Bollinger	397.5	203.5	1.8	201.7	51
Butler	457.8	173.9	5.8	168.1	37
Carter	323.9	270.6	18.8	251.8	78
Crawford	486.4	324.5	3.6	320.9	66
Dent	483.5	316.4	8.2	308.2	64
Iron	354.5	289.2	4.1	285.1	80
Madison	317.4	230.5	2.8	227.7	72
Oregon	501.8	323.0	6.6	316.4	63
Reynolds	523.1	436.5	13.5	423.0	80
Ripley	409.0	274.2	4.5	269.7	66
St. Francois	292.3	148.4	7.3	141.1	48
Shannon	639.4	518.4	41.4	477.0	75
Washington	486.4	359.0	4.0	355.0	73
Wayne	490.0	376.5	38.2	338.3	69
All counties	6,163.0	4,244.6	160.6	4,084.0	66

Table 3.--*Area of commercial forest land for Missouri's Eastern Ozarks Survey Unit and for individual counties within Unit, by forest type and stand-size class, 1972*

(Thousand acres)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
ALL COUNTIES					
Shortleaf pine	98.2	39.5	39.2	19.5	--
Eastern redcedar	12.4	3.0	1.7	7.7	--
Eastern redcedar-hardwood	20.4	--	1.7	18.7	--
Shortleaf pine-oak	211.7	56.7	122.6	32.4	--
Post-blackjack oak	709.4	142.2	294.4	272.8	--
Black-scarlet oak	1,896.0	603.7	962.8	329.5	--
White oak	836.6	242.7	484.7	109.2	--
Oak-gum-cypress	13.7	7.1	3.6	3.0	--
Elm-ash-cottonwood	78.5	37.1	30.5	10.9	--
Maple-beech	67.6	13.7	30.1	23.8	--
Nonstocked 1/	139.5	--	--	--	139.5
All forest types	4,084.0	1,145.7	1,971.3	827.5	139.5
BOLLINGER COUNTY					
Shortleaf pine	2.0	.5	.9	.6	--
Eastern redcedar	.7	.2	--	.5	--
Eastern redcedar-hardwood	.7	--	--	.7	--
Shortleaf pine-oak	7.1	2.2	3.7	1.2	--
Post-blackjack oak	34.5	7.8	14.8	11.9	--
Black-scarlet oak	92.8	34.7	44.0	14.1	--
White oak	43.9	16.1	23.5	4.3	--
Oak-gum-cypress	1.3	1.1	.1	.1	--
Elm-ash-cottonwood	5.4	3.3	1.6	.5	--
Maple-beech	4.4	1.8	1.4	1.2	--
Nonstocked 1/	8.9	--	--	--	8.9
All forest types	201.7	67.7	90.0	35.1	8.9
BUTLER COUNTY					
Shortleaf pine	9.2	4.5	3.0	1.7	--
Eastern redcedar	.8	.1	--	.7	--
Eastern redcedar-hardwood	1.2	--	--	1.2	--
Shortleaf pine-oak	8.8	2.3	5.5	1.0	--
Post-blackjack oak	26.0	4.8	12.2	9.0	--
Black-scarlet oak	65.0	19.1	34.9	11.0	--
White oak	28.6	9.3	15.8	3.5	--
Oak-gum-cypress	4.0	3.8	--	.2	--
Elm-ash-cottonwood	9.8	6.1	2.9	.8	--
Maple-beech	4.7	1.9	1.0	1.8	--
Nonstocked 1/	10.0	--	--	--	10.0
All forest types	168.1	51.9	75.3	30.9	10.0
CARTER COUNTY					
Shortleaf pine	9.5	3.6	3.4	2.5	--
Eastern redcedar	.7	.2	.1	.4	--
Eastern redcedar-hardwood	1.0	--	.1	.9	--
Shortleaf pine-oak	15.1	3.8	9.1	2.2	--
Post-blackjack oak	43.8	8.6	17.1	18.1	--
Black-scarlet oak	117.1	36.6	58.2	22.3	--
White oak	51.0	14.1	28.9	8.0	--
Oak-gum-cypress	.3	--	.3	--	--
Elm-ash-cottonwood	2.9	.9	1.2	.8	--
Maple-beech	3.1	--	2.0	1.1	--
Nonstocked	7.3	--	--	--	7.3
All forest types	251.8	67.8	120.4	56.3	7.3

1/ See glossary for stand-size classes (page 3)

(Table 3 cont. on next page)

(Table 3 cont.)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
CRAWFORD COUNTY					
Shortleaf pine	1.9	.4	.9	.6	--
Eastern redcedar	.9	.3	--	.6	--
Eastern redcedar-hardwood	.8	--	--	.8	--
Shortleaf pine-oak	11.7	3.2	6.3	2.2	--
Post-blackjack oak	56.5	11.8	24.4	20.3	--
Black-scarlet oak	154.3	51.2	78.1	25.0	--
White oak	69.3	21.0	40.2	8.1	--
Oak-gum-cypress	.8	--	.3	.5	--
Elm-ash-cottonwood	8.5	4.4	3.1	1.0	--
Maple-beech	5.0	1.3	2.0	1.7	--
Nonstocked 1/	11.2	--	--	--	11.2
All forest types	320.9	93.6	155.3	60.8	11.2
DENT COUNTY					
Shortleaf pine	4.2	2.0	1.5	.7	--
Eastern redcedar	.9	.2	--	.7	--
Eastern redcedar-hardwood	1.2	--	--	1.2	--
Shortleaf pine-oak	13.2	3.1	7.3	2.8	--
Post-blackjack oak	57.6	10.6	24.0	23.0	--
Black-scarlet oak	148.7	43.8	76.8	28.1	--
White oak	63.4	15.9	38.7	8.8	--
Oak-gum-cypress	.5	--	.4	.1	--
Elm-ash-cottonwood	3.4	1.1	1.7	.6	--
Maple-beech	4.3	.3	2.4	1.6	--
Nonstocked 1/	10.8	--	--	--	10.8
All forest types	308.2	77.0	152.8	67.6	10.8
IRON COUNTY					
Shortleaf pine	3.9	.6	2.1	1.2	--
Eastern redcedar	.6	.1	.2	.3	--
Eastern redcedar-hardwood	1.1	--	.2	.9	--
Shortleaf pine-oak	15.0	3.5	9.5	2.0	--
Post-blackjack oak	49.5	9.8	21.8	17.9	--
Black-scarlet oak	139.3	43.3	74.3	21.7	--
White oak	60.6	16.2	37.4	7.0	--
Oak-gum-cypress	.4	--	.3	.1	--
Elm-ash-cottonwood	3.8	1.4	2.0	.4	--
Maple-beech	3.7	.7	1.3	1.7	--
Nonstocked 1/	7.2	--	--	--	7.2
All forest types	285.1	75.6	149.1	53.2	7.2
MADISON COUNTY					
Shortleaf pine	9.6	2.8	4.1	2.7	--
Eastern redcedar	.6	.1	.2	.3	--
Eastern redcedar-hardwood	1.5	--	.2	1.3	--
Shortleaf pine-oak	17.4	4.7	11.3	1.4	--
Post-blackjack oak	34.9	7.9	14.9	12.1	--
Black-scarlet oak	102.8	32.5	54.6	15.7	--
White oak	44.3	11.9	26.6	5.8	--
Oak-gum-cypress	.6	.2	.1	.3	--
Elm-ash-cottonwood	5.0	2.4	1.9	.7	--
Maple-beech	4.5	2.0	1.0	1.5	--
Nonstocked 1/	6.5	--	--	--	6.5
All forest types	227.7	64.5	114.9	41.8	6.5

1/ See glossary for stand-size classes (page 3)

(Table 3 cont. on next page)

(Table 3 cont.)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
OREGON COUNTY					
Shortleaf pine	7.0	3.5	2.5	1.0	--
Eastern redcedar	1.3	.5	--	.8	--
Eastern redcedar-hardwood	1.9	--	--	1.9	--
Shortleaf pine-oak	19.0	5.5	9.9	3.6	--
Post-blackjack oak	59.2	11.6	21.2	26.4	--
Black-scarlet oak	142.9	44.3	66.3	32.3	--
White oak	61.8	18.0	32.9	10.9	--
Oak-gum-cypress	.4	--	.3	.1	--
Elm-ash-cottonwood	4.5	2.2	1.4	.9	--
Maple-beech	4.9	.3	3.2	1.4	--
Nonstocked 1/	13.5	--	--	--	13.5
All forest types	316.4	85.9	137.7	79.3	13.5
REYNOLDS COUNTY					
Shortleaf pine	7.2	2.2	2.9	2.1	--
Eastern redcedar	.9	.3	.2	.4	--
Eastern redcedar-hardwood	1.3	--	.2	1.1	--
Shortleaf pine-oak	18.8	5.2	11.1	2.5	--
Post-blackjack oak	71.8	15.7	31.6	24.5	--
Black-scarlet oak	205.2	68.1	106.6	30.5	--
White oak	92.4	27.3	55.1	10.0	--
Oak-gum-cypress	.7	.1	.3	.3	--
Elm-ash-cottonwood	6.8	2.9	3.0	.9	--
Maple-beech	6.3	1.5	2.6	2.2	--
Nonstocked 1/	11.6	--	--	--	11.6
All forest types	423.0	123.3	213.6	74.5	11.6
RIPLEY COUNTY					
Shortleaf pine	10.3	5.5	4.4	.4	--
Eastern redcedar	.8	.1	--	.7	--
Eastern redcedar-hardwood	1.2	--	--	1.2	--
Shortleaf pine-oak	17.1	3.9	10.6	2.6	--
Post-blackjack oak	46.8	8.6	18.4	19.8	--
Black-scarlet oak	119.2	36.1	60.6	22.5	--
White oak	51.6	14.0	29.8	7.8	--
Oak-gum-cypress	1.2	.6	.2	.4	--
Elm-ash-cottonwood	6.9	3.4	2.6	.9	--
Maple-beech	5.2	1.2	2.4	1.6	--
Nonstocked 1/	9.4	--	--	--	9.4
All forest types	269.7	73.4	129.0	57.9	9.4
ST. FRANCOIS COUNTY					
Shortleaf pine	1.2	.1	.5	.6	--
Eastern redcedar	.9	.1	.2	.6	--
Eastern redcedar-hardwood	2.2	--	.2	2.0	--
Shortleaf pine-oak	6.1	.9	3.4	1.8	--
Post-blackjack oak	26.9	4.7	10.3	11.9	--
Black-scarlet oak	62.0	19.4	30.2	12.4	--
White oak	26.2	7.3	15.3	3.6	--
Oak-gum-cypress	.4	--	.1	.3	--
Elm-ash-cottonwood	4.2	1.8	1.4	1.0	--
Maple-beech	3.5	.3	1.8	1.4	--
Nonstocked 1/	7.5	--	--	--	7.5
All forest types	141.1	34.6	63.4	35.6	7.5

1/See glossary for stand-size classes (page 3)

(Table 3 cont. on next page)

(Table 3 cont.)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
SHANNON COUNTY					
Shortleaf pine	8.3	3.6	3.4	1.3	--
Eastern redcedar	1.1	.3	.1	.7	--
Eastern redcedar-hardwood	2.3	--	.1	2.2	--
Shortleaf pine-oak	25.2	6.0	14.4	4.8	--
Post-blackjack oak	88.3	15.4	35.1	37.8	--
Black-scarlet oak	227.3	67.7	112.4	47.2	--
White oak	97.8	27.0	55.6	15.2	--
Oak-gum-cypress	1.1	--	1.0	.1	--
Elm-ash-cottonwood	5.3	1.8	2.9	.6	--
Maple-beech	5.8	.2	3.3	2.3	--
Nonstocked 1/	14.5	--	--	--	14.5
All forest types	477.0	122.0	228.3	112.2	14.5
WASHINGTON COUNTY					
Shortleaf pine	10.3	5.5	4.4	.4	--
Eastern redcedar	1.1	.3	.3	.5	--
Eastern redcedar-hardwood	2.1	--	.3	1.8	--
Shortleaf pine-oak	16.8	5.4	9.2	2.2	--
Post-blackjack oak	59.1	13.5	25.1	20.5	--
Black-scarlet oak	165.7	57.5	85.0	23.2	--
White oak	75.6	23.6	44.1	7.9	--
Oak-gum-cypress	.4	--	.1	.3	--
Elm-ash-cottonwood	5.8	2.6	2.6	.6	--
Maple-beech	6.9	1.7	3.1	2.1	--
Nonstocked 1/	11.2	--	--	--	11.2
All forest types	355.0	110.1	174.2	59.5	11.2
WAYNE COUNTY					
Shortleaf pine	13.6	4.7	5.2	3.7	--
Eastern redcedar	1.1	.2	.4	.5	--
Eastern redcedar-hardwood	1.9	--	.4	1.5	--
Shortleaf pine-oak	20.4	7.0	11.3	2.1	--
Post-blackjack oak	54.5	11.4	23.5	19.6	--
Black-scarlet oak	153.7	49.4	80.8	23.5	--
White oak	70.1	21.0	40.8	8.3	--
Oak-gum-cypress	1.6	1.3	.1	.2	--
Elm-ash-cottonwood	6.2	2.8	2.2	1.2	--
Maple-beech	5.3	.5	2.6	2.2	--
Nonstocked 1/	9.9	--	--	--	9.9
All forest types	338.3	98.3	167.3	62.8	9.9

1/ See glossary for stand-size classes (page 3)

Table 4.—*Area of commercial forest land, by county and ownership class, Eastern Ozarks, Missouri, 1972*

(Thousand acres)

County	All ownerships	National Forest	Other federal	State, county and municipal	Forest industry	Farmer and miscellaneous private
Bollinger	201.7	1.4	--	0.3	10.2	189.8
Butler	168.1	47.5	--	7.5	5.6	107.5
Carter	251.8	86.6	--	23.0	17.9	124.3
Crawford	320.9	44.4	--	7.6	--	268.9
Dent	308.2	64.4	--	13.9	13.7	216.2
Iron	285.1	87.0	--	3.1	6.1	188.9
Madison	227.7	34.7	--	--	.1	192.9
Oregon	316.4	90.5	--	--	12.0	213.9
Reynolds	423.0	88.6	--	33.9	70.7	229.8
Ripley	269.7	88.2	--	2.2	5.5	173.8
St. Francois	141.1	.7	--	--	--	140.4
Shannon	477.0	80.9	--	54.1	143.8	198.2
Washington	355.0	72.9	--	3.3	12.0	266.8
Wayne	338.3	82.2	5.8	13.9	9.7	226.7
All counties	4,084.0	870.0	5.8	162.8	307.3	2,738.1

Table 5.—*Area of commercial forest land, by stand-volume and ownership class, Eastern Ozarks, Missouri, 1972*

(Thousand acres)

Stand volume per acre 1/ (board feet)	All ownerships	National Forest	Other federal	State, county and municipal	Forest industry	Farmer and miscellaneous private
Less than 1,500	2,412.1	275.6	3.1	87.7	195.4	1,850.3
1,500 to 5,000	1,505.4	459.3	2.7	67.2	111.9	864.3
More than 5,000	166.5	135.1	--	7.9	--	23.5
All classes	4,084.0	870.0	5.8	162.8	307.3	2,738.1

1/ International 1/4-inch rule.

Table 6.--*Area of commercial forest land, by area-condition and ownership class, Eastern Ozarks, Missouri, 1972*

(Thousand acres)

Area-condition class 1/	All ownerships	National Forest	Other federal	State, county and municipal	Forest industry	Farmer and miscellaneous private
50	163.9	148.4	--	2.8	--	12.7
60	1,722.0	581.2	4.7	78.9	152.5	904.7
70	2,198.1	140.4	1.1	81.1	154.8	1,820.7
All classes	4,084.0	870.0	5.8	162.8	307.3	2,738.1

1/ See glossary for area-condition classes (page 2).

Table 7.--*Area of commercial forest land, by site and ownership class, Eastern Ozarks, Missouri, 1972*

(Thousand acres)

Site class (cubic feet of growth per acre per year)	All ownerships	National Forest	Other federal	State, county and municipal	Forest industry	Farmer and miscellaneous private
85-119	177.0	35.2	1.1	5.9	--	134.8
50-84	1,098.8	296.5	2.4	67.2	96.4	636.3
Less than 50	2,808.2	538.3	2.3	89.7	210.9	1,967.0
All classes	4,084.0	870.0	5.8	162.8	307.3	2,738.1

Table 8.--*Area of commercial forest land, by forest type and ownership class, Eastern Ozarks, Missouri, 1972*

(Thousand acres)

Forest Type	All ownerships	National Forest	Other federal	State, county and municipal	Forest industry	Farmer and miscellaneous private
Shortleaf pine	98.2	87.4	.5	--	--	10.3
Eastern redcedar	12.4	.3	--	1.4	--	10.7
Eastern redcedar-hardwood	20.4	1.1	--	2.2	--	17.1
Shortleaf pine-oak	211.7	133.3	--	11.0	54.0	13.4
Post-blackjack oak	709.4	6.5	--	18.8	70.3	613.8
Black-scarlet oak	1,896.0	424.6	3.6	89.9	156.0	1,221.9
White oak	836.6	208.6	1.2	34.0	14.4	578.4
Oak-gum-cypress	13.7	--	--	--	--	13.7
Elm-ash-cottonwood	78.5	3.6	.5	--	12.6	61.8
Maple-beech	67.6	--	--	2.5	--	65.1
Nonstocked 1/	139.5	4.6	--	3.0	--	131.9
All forest types	4,084.0	870.0	5.8	162.8	307.3	2,738.1

1/ See glossary for stand-size classes (page 3).

Table 9.--*Area of commercial forest land, by forest type and stand-age class, Eastern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type	All ages	Stand-age class (years)										
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-119	120+
Shortleaf pine	98.2	11.3	5.0	3.7	25.1	19.7	28.7	4.7	--	--	--	--	--
Eastern redcedar	12.4	3.8	3.9	--	--	--	--	--	4.7	--	--	--	--
Eastern redcedar-hardwood	20.4	5.4	5.1	8.2	--	1.7	--	--	--	--	--	--	--
Shortleaf pine-oak	211.7	4.1	28.3	7.2	36.4	68.2	39.5	13.8	10.8	--	3.4	--	--
Post-blackjack oak	709.4	72.1	162.9	53.8	54.7	86.1	89.9	70.4	34.6	30.7	7.6	35.1	11.5
Black-scarlet oak	1,896.0	96.8	183.6	72.9	280.6	430.2	437.2	159.1	136.0	38.2	30.6	30.8	--
White oak	836.6	45.1	60.1	23.5	58.8	182.8	179.7	105.2	77.8	34.4	38.4	15.4	15.4
Oak-gum-cypress	13.7	3.0	--	--	3.6	7.1	--	--	--	--	--	--	--
Elm-ash-cottonwood	78.5	7.2	3.7	19.9	13.4	15.4	--	6.1	6.6	6.2	--	--	--
Maple-beech	67.6	22.3	4.9	10.6	6.4	6.3	8.9	.6	7.6	--	--	--	--
Nonstocked 1/	139.5	71.0	33.3	9.7	11.2	--	3.7	3.7	3.2	--	3.7	--	--
All forest types	4,084.0	342.1	490.8	209.5	490.2	817.5	787.6	363.6	281.3	109.5	83.7	81.3	26.9

1/See glossary for stand-size classes (page 3).

Table 10.--*Area of commercial forest land, by forest type and site-index class, Eastern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type	All classes	Site-index class (height in feet at 50 years)							
		20-29	30-39	40-49	50-59	60-69	70-79	80-89	90+
Shortleaf pine	98.2	--	3.1	6.0	59.5	21.4	8.2	--	--
Eastern redcedar	12.4	--	4.1	8.3	--	--	--	--	--
Eastern redcedar-hardwood	20.4	--	10.5	4.5	--	5.4	--	--	--
Shortleaf pine-oak	211.7	--	7.2	33.7	75.1	66.1	29.6	--	--
Post-blackjack oak	709.4	7.6	172.7	216.1	216.6	69.8	26.6	--	--
Black-scarlet oak	1,896.0	--	41.8	220.7	621.0	612.3	288.4	104.2	7.6
White oak	836.6	4.1	49.8	173.2	342.1	124.3	100.8	42.3	--
Oak-gum-cypress	13.7	--	--	3.6	3.0	--	3.1	--	4.0
Elm-ash-cottonwood	78.5	--	--	6.2	13.3	20.9	6.4	18.6	13.1
Maple-beech	67.6	--	3.1	23.5	17.5	.6	16.5	3.3	3.1
Nonstocked 1/	139.5	7.5	14.8	40.6	55.7	9.9	7.1	--	3.9
All forest types	4,084.0	19.2	307.1	736.4	1,403.8	930.7	486.7	168.4	31.7

1/ See glossary for stand-size classes (page 3).

Table 11.--*Area of commercial forest land, by forest type and basal-area class, Eastern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type	All classes	Basal-area class (square feet per acre)							
		0-19	20-39	40-59	60-79	80-99	100-119	120-139	140-159
Shortleaf pine	98.2	3.1	6.3	11.5	16.4	17.8	35.7	7.4	--
Eastern redcedar	12.4	7.7	3.0	--	1.7	--	--	--	--
Eastern redcedar-hardwood	20.4	7.9	--	2.7	9.8	--	--	--	--
Shortleaf pine-oak	211.7	--	7.6	67.4	61.1	54.0	14.3	7.3	--
Post-blackjack oak	709.4	26.6	45.8	280.7	232.2	100.7	23.4	--	--
Black-scarlet oak	1,896.0	22.1	117.8	478.4	690.6	433.8	145.4	7.9	--
White oak	836.6	11.6	52.6	223.5	298.6	211.5	38.8	--	--
Oak-gum-cypress	13.7	3.6	--	6.1	--	--	--	--	4.0
Elm-ash-cottonwood	78.5	3.6	--	35.9	9.7	26.0	3.3	--	--
Maple-beech	67.6	9.5	15.6	18.0	16.4	3.6	4.5	--	--
Nonstocked 1/	139.5	31.5	40.5	48.6	18.9	--	--	--	--
All forest types	4,084.0	127.2	289.2	1,172.8	1,355.4	847.4	265.4	22.6	4.0

1/ See glossary for stand-size classes (page 3).

Table 12.--*Area of commercial forest land, by forest type, stand-size, and site class, Eastern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type and stand-size class	All site classes	85 to 120 cu. ft.	50 to 85 cu. ft.	Less than 50 cu. ft.
Shortleaf pine				
Sawtimber	39.5	9.4	22.1	8.0
Poletimber	39.2	3.7	22.4	13.1
Sapling and seedling	19.5	--	5.0	14.5
All stands	98.2	13.1	49.5	35.6
Eastern redcedar				
Sawtimber	3.0	--	--	3.0
Poletimber	1.7	--	--	1.7
Sapling and seedling	7.7	--	--	7.7
All stands	12.4	--	--	12.4
Eastern redcedar-hardwood				
Sawtimber	--	--	--	--
Poletimber	1.7	--	--	1.7
Sapling and seedling	18.7	--	5.4	13.3
All stands	20.4	--	5.4	15.0
Shortleaf pine-oak				
Sawtimber	56.7	--	18.1	38.6
Poletimber	122.6	--	40.0	82.6
Sapling and seedling	32.4	--	12.1	20.3
All stands	211.7	--	70.2	141.5
Post-blackjack oak				
Sawtimber	142.2	--	11.5	130.7
Poletimber	294.4	--	27.6	266.8
Sapling and seedling	272.8	--	22.6	250.2
All stands	709.4	--	61.7	647.7
Black-scarlet oak				
Sawtimber	603.7	42.5	237.3	323.9
Poletimber	962.8	34.9	360.3	567.6
Sapling and seedling	329.5	7.6	89.9	232.0
All stands	1,896.0	85.0	687.5	1,123.5
White oak				
Sawtimber	242.7	15.3	50.4	177.0
Poletimber	484.7	19.5	86.6	378.6
Sapling and seedling	109.2	7.3	22.7	79.2
All stands	836.6	42.1	159.7	634.8
Oak-gum-cypress				
Sawtimber	7.1	4.0	3.1	--
Poletimber	3.6	--	--	3.6
Sapling and seedling	3.0	--	3.0	--
All stands	13.7	4.0	6.1	3.6
Elm-ash-cottonwood				
Sawtimber	37.1	9.3	15.4	12.4
Poletimber	30.5	10.2	13.4	6.9
Sapling and seedling	10.9	--	3.6	7.3
All stands	78.5	19.5	32.4	26.6
Maple-beech				
Sawtimber	13.7	3.0	2.5	8.2
Poletimber	30.1	3.1	10.9	16.1
Sapling and seedling	23.8	3.2	--	20.6
All stands	67.6	9.3	13.4	44.9
Nonstocked 1/	139.5	4.0	12.9	122.6
Total all types	4,084.0	177.0	1,098.8	2,808.2

1/See glossary for stand-size classes (page 3).

Table 13.--*Area of commercial forest land, by stocking class based on selected stand components, Eastern Ozarks, Missouri, 1972*

(Thousand acres)

Stocking percentage	Stocking classified in terms of					
	All trees	Growing-stock trees			Rough and rotten trees	Inhibiting vegetation
		Total	Desirable	Acceptable		
140+	11.0	--	--	--	--	--
130-139	79.8	3.5	--	--	--	--
120-129	321.7	7.4	--	3.7	--	--
110-119	603.4	44.1	--	23.1	--	--
100-109	891.8	99.9	--	48.4	--	--
90-99	901.5	197.1	--	127.2	25.3	--
80-89	686.1	394.5	--	332.8	70.1	--
70-79	347.4	457.0	--	460.0	161.3	--
60-69	161.1	659.2	--	656.7	286.0	--
50-59	61.6	633.9	--	715.3	605.0	--
40-49	3.7	604.6	11.9	646.8	833.6	--
30-39	7.5	489.7	31.6	562.5	780.4	--
20-29	7.4	302.8	66.1	305.6	751.5	--
10-19	--	158.3	201.3	169.9	441.9	--
0-10	--	32.0	3,773.1	32.0	128.9	4,084.0
Total	4,084.0	4,084.0	4,084.0	4,084.0	4,084.0	4,084.0

Table 14.--*Area of commercial forest land, by stocking class of growing-stock trees and stand-size class, Eastern Ozarks, Missouri, 1972*

(Thousand acres)

Stocking percentage	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas 1/
134 or more	3.5	--	3.5	--	--
101 to 133	151.4	65.8	85.6	--	--
61 to 100	1,707.8	521.0	914.5	272.3	--
18 to 60	2,081.8	558.9	967.7	555.2	--
Less than 17	139.5	--	--	--	139.5
All classes	4,084.0	1,145.7	1,971.3	827.5	139.5

1/ See glossary for stand-size classes (page 3).

Table 15.--*Area of noncommercial forest land, by ownership class, Eastern Ozarks, Missouri, 1972*

(Thousand acres)

Ownership class	All areas	Productive reserved areas	Unproductive areas
National Forest	14.5	--	14.5
Other public	97.3	97.3	--
Forest industry	3.6	--	3.6
Farmer and miscellaneous private	45.2	--	45.2
All ownerships	160.6	97.3	63.3

Table 16.--*Area of noncommercial forest land, by forest type, Eastern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type	All areas	Productive reserved areas	Unproductive areas
Shortleaf pine	.8	.8	--
Eastern redcedar	10.6	.6	10.0
Shortleaf pine-oak	.6	.6	--
Post-blackjack oak	39.6	18.6	21.0
Black-scarlet oak	82.1	49.8	32.3
White oak	22.0	22.0	--
Elm-ash-cottonwood	4.9	4.9	--
All forest types	160.6	97.3	63.3

Table 17.--*Number of all live trees on commercial forest land, by species and diameter class, Eastern Ozarks, Missouri, 1972*

(Thousand trees)

Species	All Classes	Diameter class (inches at breast height) 1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods:															
Shortleaf pine	121,549	52,260	28,235	17,179	12,095	6,972	3,478	892	291	105	42	--	--	--	--
Eastern redcedar	22,391	15,153	4,651	1,470	732	236	90	12	42	--	5	--	--	--	--
Total softwoods	143,940	67,413	32,886	18,649	12,827	7,208	3,568	904	333	105	47	--	--	--	--
Hardwoods:															
Select white oaks	453,594	267,635	84,517	43,464	24,920	14,956	8,454	5,205	2,348	1,027	490	223	311	44	--
Other white oaks	290,130	170,690	61,416	24,525	13,680	8,795	5,541	2,972	1,310	610	325	166	89	11	--
Select red oaks	32,327	16,897	5,923	3,009	2,236	1,595	1,071	617	478	226	135	55	75	10	--
Red oaks	595,831	319,763	121,216	55,608	37,755	28,555	17,455	8,329	3,926	1,605	775	397	388	58	1
Other red oaks	88,035	58,753	12,431	5,985	4,577	3,066	1,554	882	462	220	56	29	18	2	--
Hickory A	183,650	132,787	28,979	10,080	5,793	3,307	1,736	618	184	103	38	12	13	--	--
Hickory B	342,730	266,143	44,311	15,860	7,703	4,830	2,372	913	444	122	28	--	4	--	--
Hard maple	20,239	14,800	3,238	670	464	446	254	141	108	21	35	39	23	--	--
Soft maple	50,186	45,442	3,097	1,161	282	87	70	--	18	7	6	9	7	--	--
Beech	360	360	--	--	--	--	--	--	--	--	--	--	--	--	--
Sweetgum	4,296	1,861	1,638	257	212	213	76	28	--	--	7	--	4	--	--
Tupelo and blackgum	77,453	65,340	6,907	2,685	693	483	534	353	228	138	41	23	22	6	--
Ash	21,896	15,018	3,145	1,774	825	614	244	197	9	57	7	6	--	--	--
Sycamore	5,170	1,677	936	772	581	484	335	138	127	53	28	16	10	7	6
Cottonwood	115	--	--	53	--	--	16	11	24	--	11	--	--	--	--
River birch	1,036	--	385	249	140	106	57	54	26	7	--	9	3	--	--
Basswood	52	--	--	--	--	29	23	--	--	--	--	--	--	--	--
Black walnut	10,690	3,957	2,259	2,121	1,143	706	344	96	21	26	13	--	4	--	--
Black cherry	4,943	3,352	1,153	164	207	--	32	29	6	--	--	--	--	--	--
Elm	65,176	46,113	11,179	3,791	2,358	776	454	260	155	12	48	12	14	4	--
Other hardwoods	362,765	333,295	24,972	2,313	962	635	378	104	48	24	20	9	5	--	--
Noncommercial species	73,765	68,010	4,763	786	130	49	20	--	--	7	--	--	--	--	--
Total hardwoods	2,684,439	1,831,893	422,465	175,327	104,661	69,732	41,020	20,947	9,922	4,265	2,063	1,005	990	142	7
All species	2,828,379	1,899,306	455,351	193,976	117,488	76,940	44,588	21,851	10,255	4,370	2,110	1,005	990	142	7

Table 18.--*Number of growing-stock trees on commercial forest land, by species and diameter class, Eastern Ozarks, Missouri, 1972*

(Thousand trees)

Species	All Classes	Diameter class (inches at breast height) 1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods:															
Shortleaf pine	93,902	33,390	21,198	15,876	11,792	6,923	3,435	865	291	96	36	--	--	--	--
Eastern redcedar	17,809	12,209	3,608	1,166	510	199	72	12	33	--	--	--	--	--	--
Total softwoods	111,711	45,599	24,806	17,042	12,302	7,122	3,507	877	324	96	36	--	--	--	--
Hardwoods:															
Select white oaks	255,201	112,992	65,363	34,915	19,226	11,309	5,862	3,463	1,336	420	160	83	56	16	--
Other white oaks	139,864	68,409	36,363	16,819	8,830	4,865	2,698	1,249	478	120	14	11	8	--	--
Select red oaks	23,462	11,512	5,021	2,553	1,531	1,214	631	441	302	127	65	22	41	2	--
Red oaks	363,732	162,586	89,087	40,995	27,038	21,132	12,778	6,133	2,647	790	355	85	94	11	1
Other red oaks	20,740	9,570	4,962	2,433	1,428	1,345	469	293	154	50	22	6	8	--	--
Hickory A	77,729	44,143	18,654	7,028	4,128	2,050	1,144	404	85	69	18	6	--	--	--
Hickory B	135,965	87,474	28,123	10,028	5,083	2,952	1,331	627	278	51	14	--	4	--	--
Hard maple	10,692	8,385	1,549	215	198	173	98	37	24	1	--	9	3	--	--
Soft maple	12,192	10,945	493	573	105	22	16	--	18	7	--	9	4	--	--
Sweetgum	1,272	300	494	84	136	188	57	13	--	--	--	--	--	--	--
Tupelo and blackgum	18,696	13,406	2,926	1,198	380	200	286	133	120	32	--	6	9	--	--
Ash	5,596	3,129	824	671	440	300	76	124	9	23	--	--	--	--	--
Sycamore	3,574	673	818	614	453	422	283	123	100	47	28	5	7	1	--
Cottonwood	115	--	--	54	--	--	16	11	24	--	10	--	--	--	--
River birch	829	--	386	131	103	84	43	54	9	7	--	9	3	--	--
Black walnut	4,131	729	636	1,379	763	361	187	42	10	17	7	--	--	--	--
Black cherry	818	305	305	79	68	--	32	29	--	--	--	--	--	--	--
Elm	15,072	8,063	2,856	2,016	1,181	465	282	126	58	5	14	6	--	--	--
Other hardwoods	37,752	32,737	3,687	430	355	327	107	54	21	14	15	--	5	--	--
Total hardwoods	1,127,432	575,358	262,547	122,215	71,446	47,409	26,396	13,356	5,673	1,780	722	257	242	30	1
All species	1,239,143	620,957	287,353	139,257	83,748	54,531	29,903	14,233	5,997	1,876	758	257	242	30	1

Table 19.--*Number of short-log trees on commercial forest land, by species and diameter class, Eastern Ozarks, Missouri, 1972*

(Thousand trees)

Species	All classes	Diameter class (inches at breast height)									
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods:											
Shortleaf pine	30	--	21	--	--	9	--	--	--	--	--
Total softwoods	30	--	21	--	--	9	--	--	--	--	--
Hardwoods:											
Select white oaks	2,295	--	1,060	723	280	125	42	29	33	3	--
Other white oaks	1,340	--	632	417	217	51	13	6	4	--	--
Select red oaks	179	--	74	40	62	--	--	--	--	3	--
Red oaks	2,081	--	1,145	502	206	110	58	38	15	7	--
Other red oaks	320	--	231	14	36	33	6	--	--	--	--
Hickory A	316	--	202	52	34	9	14	--	5	--	--
Hickory B	557	--	404	94	52	7	--	--	--	--	--
Hard maple	100	--	30	40	26	--	--	4	--	--	--
Soft maple	17	--	17	--	--	--	--	--	--	--	--
Sweetgum	14	--	--	14	--	--	--	--	--	--	--
Tupelo and blackgum	158	--	74	41	12	25	--	6	--	--	--
Ash	123	--	71	43	--	9	--	--	--	--	--
Sycamore	39	--	35	--	--	--	--	--	--	--	4
River birch	22	--	14	--	8	--	--	--	--	--	--
Black walnut	100	--	73	16	11	--	--	--	--	--	--
Elm	134	--	42	43	49	--	--	--	--	--	--
Other hardwoods	37	--	17	12	8	--	--	--	--	--	--
Total hardwoods	7,832	--	4,121	2,051	1,001	369	133	83	57	13	4
All species	7,862	--	4,142	2,051	1,001	378	133	83	57	13	4

Table 20.--*Net volume of growing stock and sawtimber on commercial forest land, by species, Eastern Ozarks, Missouri, 1959 and 1972*

Species	Growing stock		Sawtimber	
	1959[1]	1972	1959[1]	1972
	Million cubic feet		Million board feet[2]	
Softwoods:				
Shortleaf pine	157.8	245.2	418.8	818.4
Cypress	2.5	--	16.0	--
Eastern redcedar	3.7	8.6	6.9	20.3
Total softwoods	164.0	253.8	441.7	838.7
Hardwoods:				
Select white oaks	394.9	500.4	722.1	1,005.1
Other white oaks	191.4	179.3	378.7	326.9
Select red oaks	67.8	66.4	153.6	179.8
Red oaks	580.2	861.0	1,147.6	2,168.8
Other red oaks	46.4	42.0	149.1	115.8
Hickory A	94.1	84.5	175.5	159.6
Hickory B	74.3	108.6	133.3	205.1
Hard maple	8.5	5.8	20.2	14.2
Soft maple	3.6	3.8	4.3	9.6
Sweetgum	5.0	3.5	7.8	4.3
Tupelo and blackgum	12.5	16.3	41.5	52.7
Ash	7.8	10.2	12.7	21.6
Sycamore	12.9	23.4	21.5	69.4
Cottonwood	5.0	2.2	23.9	9.7
River birch	1.4	5.3	2.1	17.2
Black walnut	8.8	14.7	4.3	22.7
Black cherry	1.4	1.6	7.1	4.9
Elm	15.3	22.1	17.1	37.3
Other hardwoods	7.3	10.7	15.6	23.1
Total hardwoods	1,538.6	1,961.8	3,038.0	4,447.8
All species	1,702.6	2,215.6	3,479.7	5,286.5

1/ Figures have been adjusted from those published previously for 1959 to conform to 1972 volumes because of changes in survey definitions and procedures.

2/ International 1/4-inch rule.

Table 21.--*Net volume on commercial forest land for Missouri's Eastern Ozarks Survey Unit and for individual counties within Unit, by species and kind of material, 1972*

ALL COUNTIES

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Shortleaf pine	3,103.3	1,248.1	1,855.2	818.4	416.6	401.8	64.0
Eastern redcedar	109.0	61.5	47.5	20.3	10.6	9.7	24.4
Total softwoods	3,212.3	1,309.6	1,902.7	838.7	427.2	411.5	88.4
Hardwoods:							
Select white oaks	6,333.9	3,838.2	2,495.7	1,005.1	564.5	440.6	2,141.7
Other white oaks	2,270.1	1,456.9	813.2	326.9	202.1	124.8	1,522.9
Select red oaks	840.6	369.5	471.1	179.8	115.2	64.6	201.8
Red oaks	10,898.4	5,403.4	5,495.0	2,168.8	1,295.2	873.6	3,115.8
Other red oaks	531.5	267.5	264.0	115.8	81.5	34.3	614.3
Hickory A	1,068.9	657.6	411.3	159.6	90.5	69.1	380.7
Hickory B	1,374.6	867.1	507.5	205.1	94.8	110.3	580.4
Hard maple	73.8	36.4	37.4	14.2	10.4	3.8	129.7
Soft maple	47.7	23.8	23.9	9.6	9.6	--	45.3
Sweetgum	44.5	32.8	11.7	4.3	2.7	1.6	15.2
Tupelo and blackgum	206.8	71.8	135.0	52.7	36.0	16.7	135.7
Ash	129.4	72.2	57.2	21.6	18.7	2.9	118.1
Sycamore	296.5	93.9	202.6	69.4	49.5	19.9	52.9
Cottonwood	27.4	2.4	25.0	9.7	9.7	--	--
River birch	67.0	23.8	43.2	17.2	11.3	5.9	15.0
Basswood	--	--	--	--	--	--	2.1
Black walnut	186.5	121.8	64.7	22.7	17.5	5.2	97.0
Black cherry	19.8	4.9	14.9	4.9	1.7	3.2	9.7
Elm	280.3	173.8	106.5	37.3	22.8	14.5	224.3
Other hardwoods	135.6	70.0	65.6	23.1	17.7	5.4	170.2
Noncommercial species	--	--	--	--	--	--	41.8
Total hardwoods	24,833.3	13,587.8	11,245.5	4,447.8	2,651.4	1,796.4	9,614.6
All species	28,045.6	14,897.4	13,148.2	5,286.5	3,078.6	2,207.9	9,703.0

BOLLINGER COUNTY

Softwoods:							
Shortleaf pine	108.4	42.5	65.9	29.0	14.8	14.2	2.3
Eastern redcedar	5.9	3.0	2.9	1.3	.8	.5	1.2
Total softwoods	114.3	45.5	68.8	30.3	15.6	14.7	3.5
Hardwoods:							
Select white oaks	321.7	184.3	137.4	55.0	35.6	19.4	112.2
Other white oaks	111.7	69.4	42.3	17.0	11.6	5.4	75.4
Select red oaks	43.3	17.6	25.7	9.8	7.0	2.8	11.1
Red oaks	532.6	247.4	285.2	112.4	74.2	38.2	155.9
Other red oaks	40.6	14.8	25.8	11.4	9.9	1.5	34.0
Hickory A	56.4	32.9	23.5	9.0	5.8	3.2	19.6
Hickory B	68.3	41.9	26.4	10.7	5.8	4.9	29.2
Hard maple	7.0	3.5	3.5	1.3	1.1	.2	9.1
Soft maple	3.4	1.3	2.1	.8	.8	--	2.9
Sweetgum	3.4	2.4	1.0	.4	.3	.1	1.0
Tupelo and blackgum	10.8	3.4	7.4	2.9	2.2	.7	7.3
Ash	8.5	4.6	3.9	1.5	1.4	.1	7.0
Sycamore	21.0	5.6	15.4	5.2	4.2	1.0	3.4
Cottonwood	2.4	.2	2.2	.8	.8	--	--
River birch	4.6	1.5	3.1	1.2	.8	.4	.9
Basswood	--	--	--	--	--	--	.1
Black walnut	10.1	6.3	3.8	1.3	1.1	.2	5.2
Black cherry	1.1	.3	.8	.3	.1	.2	.5
Elm	16.4	9.2	7.2	2.6	1.8	.8	13.8
Other hardwoods	9.4	4.3	5.1	1.8	1.5	.3	10.9
Noncommercial species	--	--	--	--	--	--	2.3
Total hardwoods	1,272.7	650.9	621.8	245.4	166.0	79.4	501.8
All species	1,387.0	696.4	690.6	275.7	181.6	94.1	505.3

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

BUTLER COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Shortleaf pine	174.1	66.2	107.9	47.1	29.6	17.5	4.0
Eastern redcedar	7.0	3.9	3.1	1.4	.8	.6	1.3
Total softwoods	181.1	70.1	111.0	48.5	30.4	18.1	5.3
Hardwoods							
Select white oaks	240.8	143.5	97.3	39.2	23.1	16.1	79.6
Other white oaks	82.8	54.0	28.8	11.6	7.1	4.5	57.9
Select red oaks	30.0	12.9	17.1	6.5	4.2	2.3	8.2
Red oaks	396.1	200.2	195.9	77.2	45.2	32.0	111.2
Other red oaks	105.1	22.7	82.4	36.9	35.6	1.3	45.8
Hickory A	44.4	23.8	20.6	7.7	5.0	2.7	14.1
Hickory B	51.2	33.1	18.1	7.3	3.3	4.0	20.7
Hard maple	4.7	2.0	2.7	1.0	.8	.2	7.4
Soft maple	5.0	1.4	3.6	1.5	1.5	--	3.0
Sweetgum	9.0	6.1	2.9	1.0	.9	.1	2.2
Tupelo and blackgum	8.7	3.0	5.7	2.2	1.6	.6	4.6
Ash	12.9	7.8	5.1	1.9	1.8	.1	8.6
Sycamore	32.2	7.8	24.4	8.4	7.0	1.4	4.7
Cottonwood	4.3	.4	3.9	1.5	1.5	--	--
River birch	8.8	2.9	5.9	2.4	1.5	.9	1.7
Black walnut	8.1	5.4	2.7	.9	.7	.2	5.3
Black cherry	.9	.3	.6	.2	.1	.1	.4
Elm	17.3	9.9	7.4	2.8	1.3	1.5	19.2
Other hardwoods	14.2	6.0	8.2	2.8	2.6	.2	15.2
Noncommercial species	--	--	--	--	--	--	2.1
Total hardwoods	1,076.5	543.2	533.3	213.0	144.8	68.2	411.9
All species	1,257.6	613.3	644.3	261.5	175.2	86.3	417.2
CARTER COUNTY							
Softwoods:							
Shortleaf pine	226.2	91.3	134.9	59.5	30.8	28.7	4.6
Eastern redcedar	5.4	3.1	2.3	1.0	.5	.5	1.3
Total softwoods	231.6	94.4	137.2	60.5	31.3	29.2	5.9
Hardwoods:							
Select white oaks	377.0	229.2	147.8	59.6	32.5	27.1	131.8
Other white oaks	138.7	89.0	49.7	20.0	12.2	7.8	94.1
Select red oaks	50.5	22.6	27.9	10.6	6.7	3.9	12.4
Red oaks	658.6	328.5	330.1	130.3	77.3	53.0	194.0
Other red oaks	23.7	15.2	8.5	3.7	1.5	2.2	35.0
Hickory A	63.4	39.6	23.8	9.3	5.2	4.1	23.4
Hickory B	82.9	52.4	30.5	12.3	5.6	6.7	36.3
Hard maple	2.8	1.5	1.3	.5	.3	.2	6.1
Soft maple	1.9	1.3	.6	.2	.2	--	2.2
Sweetgum	1.9	1.5	.4	.2	.1	.1	.9
Tupelo and blackgum	12.4	4.4	8.0	3.1	2.1	1.0	8.3
Ash	5.8	3.4	2.4	.9	.7	.2	5.9
Sycamore	11.3	4.4	6.9	2.4	1.4	1.0	2.0
Cottonwood	.8	.1	.7	.3	.3	--	--
River birch	.7	.4	.3	.1	--	.1	.4
Basswood	--	--	--	--	--	--	.1
Black walnut	10.6	7.0	3.6	1.3	1.0	.3	5.2
Black cherry	1.1	.3	.8	.3	.1	.2	.6
Elm	15.1	9.8	5.3	1.9	1.1	.8	10.4
Other hardwoods	4.4	2.9	1.5	.5	.2	.3	7.7
Noncommercial species	--	--	--	--	--	--	2.1
Total hardwoods	1,463.6	813.5	650.1	257.5	148.5	109.0	578.9
All species	1,695.2	907.9	787.3	318.0	179.8	138.2	584.8

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

CRAWFORD COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Shortleaf pine	169.7	68.3	101.4	44.9	20.3	24.6	3.5
Eastern redcedar	8.4	4.2	4.2	1.9	1.2	.7	1.6
Total softwoods	178.1	72.5	105.6	46.8	21.5	25.3	5.1
Hardwoods:							
Select white oaks	514.4	309.7	204.7	82.2	47.4	34.8	174.0
Other white oaks	182.3	116.6	65.7	26.3	16.8	9.5	120.5
Select red oaks	69.6	29.9	39.7	15.1	9.9	5.2	16.6
Red oaks	881.3	429.2	452.1	178.4	108.6	69.8	249.2
Other red oaks	30.8	19.3	11.5	5.0	2.3	2.7	46.1
Hickory A	87.5	54.0	33.5	13.0	7.4	5.6	31.0
Hickory B	111.0	69.7	41.3	16.7	7.9	8.8	46.0
Hard maple	5.8	2.9	2.9	1.1	.9	.2	10.6
Soft maple	5.2	2.1	3.1	1.2	1.2	--	4.4
Sweetgum	2.8	2.1	.7	.3	.1	.2	1.1
Tupelo and blackgum	16.4	5.6	10.8	4.2	2.9	1.3	11.3
Ash	11.4	5.5	5.9	2.2	2.0	.2	10.4
Sycamore	31.5	9.2	22.3	7.6	5.8	1.8	5.4
Cottonwood	3.4	.3	3.1	1.2	1.2	--	--
River birch	9.5	3.3	6.2	2.5	1.8	.7	1.7
Basswood	--	--	--	--	--	--	.2
Black walnut	15.3	10.0	5.3	1.9	1.5	.4	8.1
Black cherry	1.7	.4	1.3	.4	.1	.3	.7
Elm	22.8	13.7	9.1	3.2	2.1	1.1	19.9
Other hardwoods	15.0	7.1	7.9	2.8	2.4	.4	16.7
Noncommercial species	--	--	--	--	--	--	3.7
Total hardwoods	2,017.7	1,090.6	927.1	365.3	222.3	143.0	777.7
All species	2,195.8	1,163.1	1,032.7	412.1	243.8	168.3	782.8
DENT COUNTY							
Softwoods:							
Shortleaf pine	196.5	78.6	117.9	52.2	24.5	27.7	4.1
Eastern redcedar	5.2	3.0	2.2	1.0	.5	.5	1.5
Total softwoods	201.7	81.6	120.1	53.2	25.0	28.2	5.6
Hardwoods:							
Select white oaks	478.1	297.6	180.5	72.8	37.6	35.2	159.1
Other white oaks	176.3	115.2	61.1	24.5	14.5	10.0	119.4
Select red oaks	63.2	28.5	34.7	13.2	8.0	5.2	14.5
Red oaks	838.8	424.9	413.9	163.5	92.4	71.1	237.2
Other red oaks	29.6	19.1	10.5	4.5	1.7	2.8	45.3
Hickory A	79.8	50.6	29.2	11.4	5.9	5.5	29.9
Hickory B	106.0	67.3	38.7	15.6	6.6	9.0	43.8
Hard maple	4.0	2.0	2.0	.8	.5	.3	8.1
Soft maple	2.3	1.6	.7	.3	.3	-	2.8
Sweetgum	2.3	1.7	.6	.2	.1	.1	.9
Tupelo and blackgum	14.9	5.3	9.6	3.8	2.4	1.4	10.1
Ash	7.3	4.4	2.9	1.1	.9	.2	7.3
Sycamore	14.5	5.4	9.1	3.2	1.8	1.4	3.1
Cottonwood	.9	.1	.8	.3	.3	--	--
River birch	1.7	.8	.9	.4	.2	.2	.6
Basswood	--	--	--	--	--	--	.2
Black walnut	13.7	9.1	4.6	1.6	1.2	.4	7.2
Black cherry	1.4	.3	1.1	.4	.2	.2	.8
Elm	19.0	12.4	6.6	2.3	1.3	1.0	14.3
Other hardwoods	6.4	4.0	2.4	.9	.4	.5	9.5
Noncommercial species	--	--	--	--	--	--	2.9
Total hardwoods	1,860.2	1,050.3	809.9	320.8	176.3	144.5	716.1
All species	2,061.9	1,131.9	930.0	374.0	201.3	172.7	721.7

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

IRON COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet 1/			Thousand cords
Softwoods:							
Shortleaf pine	191.7	83.0	108.7	48.2	19.7	28.5	3.5
Eastern redcedar	7.1	4.2	2.9	1.2	.5	.7	1.4
Total softwoods	198.8	87.2	111.6	49.4	20.2	29.2	4.9
Hardwoods:							
Select white oaks	469.2	290.8	178.4	72.0	38.5	33.5	150.3
Other white oaks	165.7	107.7	58.0	23.3	13.9	9.4	106.1
Select red oaks	62.1	27.7	34.4	13.1	8.1	5.0	13.9
Red oaks	816.5	411.2	405.3	160.0	92.5	67.5	222.6
Other red oaks	27.9	18.0	9.9	4.2	1.7	2.5	40.3
Hickory A	76.9	48.4	28.5	11.2	6.0	5.2	26.3
Hickory B	100.4	63.6	36.8	14.9	6.6	8.3	41.1
Hard maple	4.4	2.3	2.1	.8	.6	.2	8.1
Soft maple	2.6	1.6	1.0	.4	.4	--	2.8
Sweetgum	2.1	1.6	.5	.2	.1	.1	.7
Tupelo and blackgum	14.6	5.2	9.4	3.7	2.4	1.3	10.0
Ash	7.7	4.4	3.3	1.3	1.1	.2	7.5
Sycamore	15.9	5.6	10.3	3.5	2.3	1.2	3.0
Cottonwood	1.1	.1	1.0	.4	.4	--	--
River birch	3.8	1.4	2.4	1.0	.6	.4	.9
Basswood	--	--	--	--	--	--	.2
Black walnut	13.3	8.8	4.5	1.6	1.2	.4	6.6
Black cherry	1.4	.3	1.1	.4	.1	.3	.6
Elm	17.8	11.1	6.7	2.3	1.5	.8	13.5
Other hardwoods	7.2	4.0	3.2	1.1	.8	.3	10.0
Noncommercial species	--	--	--	--	--	--	2.8
Total hardwoods	1,810.6	1,013.8	796.8	315.4	178.8	136.6	667.3
All species	2,009.4	1,101.0	908.4	364.8	199.0	165.8	672.2

MADISON COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet 1/			Thousand cords
Softwoods:							
Shortleaf pine	227.6	98.4	129.2	57.1	27.4	29.7	4.2
Eastern redcedar	8.2	5.0	3.2	1.3	.6	.7	1.5
Total softwoods	235.8	103.4	132.4	58.4	28.0	30.4	5.7
Hardwoods:							
Select white oaks	353.8	215.9	137.9	55.6	30.6	25.0	116.9
Other white oaks	123.5	78.9	44.6	18.0	11.2	6.8	80.6
Select red oaks	46.4	20.9	25.5	9.7	6.0	3.7	11.0
Red oaks	612.7	309.6	303.1	119.7	70.6	49.1	172.5
Other red oaks	21.5	14.0	7.5	3.2	1.4	1.8	30.5
Hickory A	58.3	36.0	22.3	8.7	4.9	3.8	20.4
Hickory B	75.1	47.5	27.6	11.1	5.2	5.9	32.1
Hard maple	6.3	2.8	3.5	1.3	1.1	.2	9.1
Soft maple	2.9	1.4	1.5	.6	.6	--	2.8
Sweetgum	1.7	1.3	.4	.2	.1	.1	.7
Tupelo and blackgum	11.8	4.1	7.7	3.0	2.1	.9	7.2
Ash	7.3	3.8	3.5	1.3	1.2	.1	6.9
Sycamore	18.5	5.5	13.0	4.4	3.4	1.0	3.6
Cottonwood	1.6	.1	1.5	.6	.6	--	--
River birch	6.2	2.0	4.2	1.7	1.2	.5	1.1
Basswood	--	--	--	--	--	--	.1
Black walnut	10.6	7.0	3.6	1.2	1.0	.2	5.4
Black cherry	1.1	.3	.8	.3	.1	.2	.4
Elm	16.4	9.7	6.7	2.3	1.6	.7	12.7
Other hardwoods	9.6	4.1	5.5	1.9	1.6	.3	10.2
Noncommercial species	--	--	--	--	--	--	2.6
Total hardwoods	1,385.3	764.9	620.4	244.8	144.5	100.3	526.8
All species	1,621.1	868.3	752.8	303.2	172.5	130.7	532.5

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

OREGON COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1]			Thousand cords
Softwoods:							
Shortleaf pine	236.3	92.8	143.5	63.3	33.6	29.7	5.3
Eastern redcedar	7.3	3.5	3.8	1.7	1.2	.5	2.0
Total softwoods	243.6	96.3	147.3	65.0	34.8	30.2	7.3
Hardwoods:							
Select white oaks	442.0	263.3	178.7	72.0	40.8	31.2	165.2
Other white oaks	170.2	107.7	62.5	25.0	15.7	9.3	123.6
Select red oaks	59.8	26.2	33.6	12.8	8.4	4.4	15.7
Red oaks	771.2	379.0	392.2	155.0	93.9	61.1	242.1
Other red oaks	29.0	18.3	10.7	4.5	1.9	2.6	46.9
Hickory A	77.1	47.6	29.5	11.5	6.6	4.9	30.4
Hickory B	99.9	62.3	37.6	15.2	7.1	8.1	45.5
Hard maple	3.9	1.9	2.0	.7	.4	.3	8.5
Soft maple	3.0	1.7	1.3	.5	.5	--	3.0
Sweetgum	2.3	1.8	.5	.2	.1	.1	.9
Tupelo and blackgum	14.6	5.0	9.6	3.8	2.5	1.3	10.2
Ash	8.0	4.3	3.7	1.4	1.1	.3	7.8
Sycamore	17.7	5.8	11.9	4.1	2.8	1.3	3.2
Cottonwood	1.6	.1	1.5	.6	.6	--	--
River birch	2.4	.9	1.5	.6	.4	.2	.7
Basswood	--	--	--	--	--	--	.2
Black walnut	13.0	8.5	4.5	1.6	1.2	.4	6.8
Black cherry	1.3	.4	.9	.3	.1	.2	.8
Elm	19.4	12.4	7.0	2.5	1.5	1.0	14.6
Other hardwoods	8.0	4.6	3.4	1.2	.8	.4	11.4
Noncommercial species	--	--	--	--	--	--	2.7
Total hardwoods	1,744.4	951.8	792.6	313.5	186.4	127.1	740.2
All species	1,988.0	1,048.1	939.9	378.5	221.2	157.3	747.5

REYNOLDS COUNTY

Softwoods:							
Shortleaf pine	285.4	115.7	169.7	75.2	35.4	39.8	5.6
Eastern redcedar	10.5	5.9	4.6	2.0	1.0	1.0	2.1
Total softwoods	295.9	121.6	174.3	77.2	36.4	40.8	7.7
Hardwoods:							
Select white oaks	700.7	425.5	275.2	110.7	63.0	47.7	227.6
Other white oaks	244.0	155.9	88.1	35.4	22.4	13.0	156.4
Select red oaks	93.4	40.7	52.7	20.2	13.0	7.2	21.4
Red oaks	1,201.2	590.4	610.8	241.0	145.7	95.3	330.4
Other red oaks	44.2	26.4	17.8	7.7	4.2	3.5	60.0
Hickory A	116.2	72.0	44.2	17.2	9.8	7.4	39.7
Hickory B	149.1	93.8	55.3	22.3	10.6	11.7	61.1
Hard maple	7.9	3.9	4.0	1.5	1.2	.3	13.7
Soft maple	4.4	2.4	2.0	.8	.8	--	4.8
Sweetgum	3.7	2.7	1.0	.3	.2	.1	1.4
Tupelo and blackgum	22.6	7.8	14.8	5.8	4.0	1.8	14.9
Ash	12.5	6.9	5.6	2.1	1.8	.3	11.9
Sycamore	27.5	9.2	18.3	6.2	4.3	1.9	5.1
Cottonwood	2.2	.2	2.0	.8	.8	--	--
River birch	6.5	2.3	4.2	1.7	1.2	.5	1.4
Basswood	--	--	--	--	--	--	.2
Black walnut	20.4	13.2	7.2	2.5	2.0	.5	10.0
Black cherry	2.2	.5	1.7	.6	.2	.4	.9
Elm	29.1	17.7	11.4	3.9	2.5	1.4	21.7
Other hardwoods	12.8	6.6	6.2	2.2	1.7	.5	16.2
Noncommercial species	--	--	--	--	--	--	4.5
Total hardwoods	2,700.6	1,478.1	1,222.5	482.9	289.4	193.5	1,003.3
All species	2,996.5	1,599.7	1,396.8	560.1	325.8	234.3	1,011.0

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

RIPLEY COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet 1/			Thousand cords
Softwoods:							
Shortleaf pine	265.6	104.9	160.7	70.4	39.9	30.5	5.7
Eastern redcedar	6.8	4.0	2.8	1.2	.7	.5	1.5
Total softwoods	272.4	108.9	163.5	71.6	40.6	31.0	7.2
Hardwoods:							
Select white oaks	395.6	241.9	153.7	61.9	33.5	28.4	137.7
Other white oaks	144.1	93.6	50.5	20.3	12.1	8.2	99.4
Select red oaks	52.1	23.4	28.7	10.9	6.8	4.1	12.9
Red oaks	684.0	345.2	338.8	133.7	78.0	55.7	200.1
Other red oaks	32.8	17.3	15.5	6.7	4.5	2.2	40.2
Hickory A	66.6	41.2	25.4	9.8	5.4	4.4	24.6
Hickory B	87.8	56.2	31.6	12.8	5.6	7.2	37.8
Hard maple	4.7	2.2	2.5	1.0	.7	.3	8.6
Soft maple	3.8	1.6	2.2	.9	.9	--	3.2
Sweetgum	3.0	2.3	.7	.3	.2	.1	1.0
Tupelo and blackgum	13.4	4.8	8.6	3.4	2.3	1.1	8.3
Ash	9.3	5.0	4.3	1.6	1.4	.2	8.2
Sycamore	24.5	7.5	17.0	5.9	4.2	1.7	4.3
Cottonwood	2.4	.2	2.2	.9	.9	--	--
River birch	7.3	2.5	4.8	1.9	1.3	.6	1.4
Basswood	--	--	--	--	--	--	.1
Black walnut	11.8	7.8	4.0	1.4	1.0	.4	6.5
Black cherry	1.3	.3	1.0	.3	.1	.2	.8
Elm	19.6	12.5	7.1	2.5	1.5	1.0	16.7
Other hardwoods	12.1	5.9	6.2	2.2	1.8	.4	13.4
Noncommercial species	--	--	--	--	--	--	3.0
Total hardwoods	1,576.2	871.4	704.8	278.4	162.2	116.2	628.2
All species	1,848.6	980.3	868.3	350.0	202.8	147.2	635.4
ST. FRANCOIS COUNTY							
Softwoods:							
Shortleaf pine	70.9	30.0	40.9	18.2	6.8	11.4	1.5
Eastern redcedar	6.5	4.0	2.5	1.0	.3	.7	1.8
Total softwoods	77.4	34.0	43.4	19.2	7.1	12.1	3.3
Hardwoods:							
Select white oaks	193.6	118.0	75.6	30.4	16.3	14.1	72.5
Other white oaks	75.5	48.6	26.9	10.8	6.4	4.4	55.2
Select red oaks	26.8	12.1	14.7	5.6	3.6	2.0	6.6
Red oaks	338.5	168.3	170.2	67.2	39.4	27.8	104.4
Other red oaks	13.4	8.5	4.9	2.1	.8	1.3	21.2
Hickory A	34.5	21.4	13.1	5.1	2.7	2.4	14.1
Hickory B	44.4	28.0	16.4	6.6	2.8	3.8	20.1
Hard maple	2.5	1.2	1.3	.5	.3	.2	5.2
Soft maple	2.1	.8	1.3	.5	.5	--	1.7
Sweetgum	1.4	1.1	.3	.1	--	.1	.6
Tupelo and blackgum	5.9	2.1	3.8	1.5	1.0	.5	4.4
Ash	5.3	2.8	2.5	.9	.8	.1	5.0
Sycamore	13.8	4.3	9.5	3.3	2.3	1.0	2.5
Cottonwood	1.4	.1	1.3	.5	.5	--	--
River birch	3.7	1.3	2.4	.9	.7	.2	.8
Basswood	--	--	--	--	--	--	.1
Black walnut	6.1	4.1	2.0	.7	.5	.2	3.8
Black cherry	.7	.2	.5	.2	.1	.1	.5
Elm	10.2	6.5	3.7	1.3	.7	.6	9.9
Other hardwoods	6.6	3.4	3.2	1.2	.9	.3	7.7
Noncommercial species	--	--	--	--	--	--	1.7
Total hardwoods	786.4	432.8	353.6	139.4	80.3	59.1	338.0
All species	863.8	466.8	397.0	158.6	87.4	71.2	341.3

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1]			Thousand cords
SHANNON COUNTY							
Softwoods:							
Shortleaf pine	337.8	136.8	201.0	89.1	42.1	47.0	6.8
Eastern redcedar	9.0	5.1	3.9	1.6	.9	.7	2.5
Total softwoods	346.8	141.9	204.9	90.7	43.0	47.7	9.3
Hardwoods:							
Select white oaks	724.8	443.0	281.8	113.9	61.2	52.7	248.5
Other white oaks	268.1	174.3	93.8	37.8	22.1	15.7	181.7
Select red oaks	96.2	42.6	53.6	20.5	12.7	7.8	22.6
Red oaks	1,270.5	638.6	631.9	249.6	144.3	105.3	365.7
Other red oaks	45.4	29.0	16.4	7.2	2.8	4.4	68.7
Hickory A	121.9	76.4	45.5	17.7	9.5	8.2	44.3
Hickory B	160.1	101.1	59.0	23.9	10.4	13.5	67.8
Hard maple	5.4	2.9	2.5	1.0	.6	.4	11.6
Soft maple	3.7	2.5	1.2	.6	.6	--	4.2
Sweetgum	3.5	2.7	.8	.2	.1	.1	1.2
Tupelo and blackgum	23.1	8.1	15.0	5.8	3.8	2.0	15.7
Ash	11.7	6.8	4.9	2.0	1.5	.5	11.3
Sycamore	22.5	8.4	14.1	4.9	2.8	2.1	4.3
Cottonwood	1.4	.1	1.3	.4	.4	--	--
River birch	3.3	1.4	1.9	.7	.3	.4	1.2
Basswood	--	--	--	--	--	--	.2
Black walnut	20.7	13.8	6.9	2.5	1.9	.6	10.5
Black cherry	2.2	.5	1.7	.3	.1	.2	1.2
Elm	28.5	18.6	9.9	3.3	2.0	1.3	21.0
Other hardwoods	9.8	6.3	3.5	1.2	.6	.6	14.9
Noncommercial species	--	--	--	--	--	--	4.3
Total hardwoods	2,822.8	1,577.1	1,245.7	493.5	277.7	215.8	1,100.9
All species	3.169.6	1,719.0	1,450.6	584.2	320.7	263.5	1,110.2
WASHINGTON COUNTY							
Softwoods:							
Shortleaf pine	296.6	114.1	182.5	80.0	46.6	33.4	6.5
Eastern redcedar	11.4	6.4	5.0	2.1	1.1	1.0	2.4
Total softwoods	308.0	120.5	187.5	82.1	47.7	34.4	8.9
Hardwoods:							
Select white oaks	579.2	346.6	232.6	93.5	55.2	38.3	190.2
Other white oaks	201.0	127.0	74.0	29.8	19.3	10.5	130.4
Select red oaks	76.6	33.1	43.5	16.7	11.1	5.6	18.2
Red oaks	981.3	476.0	505.3	199.2	124.3	74.9	274.3
Other red oaks	33.2	21.1	12.1	5.2	2.5	2.7	48.9
Hickory A	96.1	59.0	37.1	14.4	8.4	6.0	33.1
Hickory B	124.2	77.9	46.3	18.7	9.3	9.4	51.4
Hard maple	9.0	4.6	4.4	1.7	1.3	.4	13.5
Soft maple	3.9	2.1	1.8	.7	.7	--	4.0
Sweetgum	2.8	2.1	.7	.3	.1	.2	1.0
Tupelo and blackgum	19.5	6.7	12.8	4.9	3.5	1.4	12.3
Ash	10.9	6.1	4.8	1.8	1.6	.2	10.5
Sycamore	24.1	7.9	16.2	5.5	3.9	1.6	4.6
Cottonwood	2.0	.2	1.8	.7	.7	--	--
River birch	5.8	2.0	3.8	1.5	.9	.6	1.3
Basswood	--	--	--	--	--	--	.2
Black walnut	17.1	10.8	6.3	2.2	1.7	.5	8.3
Black cherry	1.8	.4	1.4	.5	.2	.3	.8
Elm	25.7	15.8	9.9	3.4	2.3	1.1	19.1
Other hardwoods	11.2	5.8	5.4	1.9	1.4	.5	14.1
Noncommercial species	--	--	--	--	--	--	3.8
Total hardwoods	2,225.4	1,205.2	1,020.2	402.6	248.4	154.2	840.0
All species	2,533.4	1,325.7	1,207.7	484.7	296.1	188.6	848.9

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

WAYNE COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1]			Thousand cords
Softwoods:							
Shortleaf pine	316.5	125.5	191.0	84.2	45.1	39.1	6.4
Eastern redcedar	10.3	6.2	4.1	1.6	.5	1.1	2.3
Total softwoods	326.8	131.7	195.1	85.8	45.6	40.2	8.7
Hardwoods:							
Select white oaks	543.0	328.9	214.1	86.3	49.2	37.1	176.1
Other white oaks	186.2	119.0	67.2	27.1	16.8	10.3	122.2
Select red oaks	70.6	31.3	39.3	15.1	9.7	5.4	16.7
Red oaks	915.1	454.9	460.2	181.6	108.8	72.8	256.2
Other red oaks	54.3	23.8	30.5	13.5	10.7	2.8	51.4
Hickory A	89.8	54.7	35.1	13.6	7.9	5.7	30.7
Hickory B	114.2	72.3	41.9	17.0	8.0	9.0	47.5
Hard maple	5.4	2.7	2.7	1.0	.6	.4	10.1
Soft maple	3.5	2.0	1.5	.6	.6	--	3.5
Sweetgum	4.6	3.4	1.2	.4	.3	.1	1.6
Tupelo and blackgum	18.1	6.3	11.8	4.6	3.2	1.4	11.1
Ash	10.8	6.4	4.4	1.6	1.4	.2	9.8
Sycamore	21.5	7.3	14.2	4.8	3.3	1.5	3.7
Cottonwood	1.9	.2	1.7	.7	.7	--	--
River birch	2.7	1.1	1.6	.6	.4	.2	.9
Basswood	--	--	--	--	--	--	.2
Black walnut	15.7	10.0	5.7	2.0	1.5	.5	8.0
Black cherry	1.6	.4	1.2	.4	.1	.3	.7
Elm	23.0	14.5	8.5	3.0	1.6	1.4	17.5
Other hardwoods	8.9	5.0	3.9	1.4	1.0	.4	12.3
Noncommercial species	--	--	--	--	--	--	3.3
Total hardwoods	2,090.9	1,144.2	946.7	375.3	225.8	149.5	783.5
All species	2,417.7	1,275.9	1,141.8	461.1	271.4	189.7	792.2

1/ International 1/4-inch rule.

Table 22.--*Net volume of timber on commercial forest land, by class of timber, and softwoods and hardwoods, Eastern Ozarks, Missouri, 1972*

(Million cubic feet)

Class of timber	All species	Softwoods	Hardwoods
Growing stock trees:			
Saw log trees:			
Saw log portion	763.7	120.2	643.5
Upper stem portion	275.0	30.1	244.9
Total sawtimber	1,038.7	150.3	888.4
Poletimber trees	1,176.9	103.5	1,073.4
Total growing stock	2,215.6	253.8	1,961.8
Cull trees:			
Rough cull trees:			
Sawtimber	190.8	.6	190.2
Poletimber	323.9	4.9	319.0
Total rough cull	514.7	5.5	509.2
Short log cull trees:			
Sawtimber	119.8	.3	119.5
Poletimber	.9	--	.9
Total short log	120.7	.3	120.4
Rotten cull trees:			
Sawtimber	75.7	.3	75.4
Poletimber	55.4	.9	54.5
Total rotten cull	131.1	1.2	129.9
Total cull	766.5	7.0	759.5
Salvable dead trees:			
Sawtimber	36.0	2.7	33.3
Poletimber	21.3	1.9	19.4
Total salvable dead	57.3	4.6	52.7
All classes	3,039.4	265.4	2,774.0

Table 23.--*Net volume of growing stock, sawtimber, and rough and rotten trees on commercial forest land, by individual species, Eastern Ozarks, Missouri, 1972*

Species	Growing stock	Sawtimber	Rough and rotten trees
	Million cubic feet	Million board feet[1]/	Million cubic feet
Softwoods:			
Shortleaf pine	245.2	818.4	5.1
Eastern redcedar	8.6	20.3	1.9
Total softwoods	253.8	838.7	7.0
Hardwoods:			
Select white oak group			
White oak	491.3	978.5	159.6
Bur oak	.7	3.8	.3
Chinkapin oak	6.2	15.1	8.7
Overcup oak	1.1	3.2	.4
Swamp chestnut oak	.3	1.5	.1
Swamp white oak	.8	3.0	.1
Other white oak group			
Post oak	179.3	326.9	120.3
Select red oak group			
Cherrybark oak	.3	1.6	.5
Northern red oak	65.3	176.4	14.8
Shumard oak	.8	1.8	.6
Red oak group			
Black oak	571.7	1,426.6	181.5
Scarlet oak	273.5	706.3	58.5
Southern red oak	15.8	35.9	6.1
Other red oak group			
Blackjack oak	27.1	47.6	42.9
Pin oak	8.0	39.1	1.9
Shingle oak	1.1	2.8	2.3
Willow oak	5.8	26.3	1.4
Hickory A group			
Mockernut hickory	70.7	125.7	24.6
Pecan	.6	1.4	--
Shagbark hickory	7.5	17.6	4.3
Shellbark hickory	5.7	14.9	1.2
Hickory B group			
Black hickory	30.4	49.3	10.1
Bitternut hickory	5.1	9.3	2.1
Pignut hickory	72.8	144.8	33.7
Water hickory	.3	1.7	--
Hardwoods (cont.):			
Hard maple group			
Sugar maple	5.8	14.2	10.2
Soft maple group			
Red maple	1.5	--	2.0
Silver maple	2.3	9.6	1.6
Sweetgum	3.5	4.3	1.2
Tupelo and blackgum group			
Blackgum	16.3	52.7	10.7
Ash group			
White ash	5.2	9.4	6.3
Green ash	5.0	12.2	3.0
Sycamore group			
American sycamore	23.4	69.4	4.2
Cottonwood group			
Eastern cottonwood	2.2	9.7	--
River birch	5.3	17.2	1.2
Basswood group			
American basswood	--	--	.2
Black walnut	14.7	22.7	7.7
Black cherry	1.6	4.9	.8
Elm group			
Winged elm	3.1	.8	1.3
American elm	13.4	28.0	10.9
Slippery elm	3.3	5.7	3.6
Rock elm	2.3	2.8	1.9
Other hardwoods			
Hackberry	2.9	3.2	1.7
Flowering dogwood	.1	--	1.8
Common persimmon	.9	--	.7
Honeylocust	2.1	4.2	2.9
Butternut	.1	--	.6
Red mulberry	--	--	2.4
Black locust	.5	2.9	.1
Black willow	3.7	12.8	.4
Sassafras	.4	--	1.4
Boxelder	--	--	1.4
Noncommercial	--	--	3.3
Total hardwoods	1,961.8	4,447.8	759.5
All species	2,215.6	5,286.5	766.5

(Table 23 continued in next column)

1/ International 1/4-inch rule.

Table 24.--*Net volume of growing stock and sawtimber on commercial forest land, by ownership class and species group, Eastern Ozarks, Missouri, 1972*

GROWING STOCK

Ownership class	All species	Shortleaf pine	Other softwoods	Soft hardwoods	Hard hardwoods
		Thousand cords			
National Forest	7,969.0	1,706.2	3.2	178.3	6,081.3
Other federal	61.5	2.9	--	1.7	56.9
State, county and municipal	1,190.6	100.0	9.0	24.5	1,057.1
Forest industry	1,680.0	221.1	--	36.7	1,422.2
Farmer and miscellaneous private	17,144.5	1,073.1	96.8	766.4	15,208.2
All ownerships	28,045.6	3,103.3	109.0	1,007.6	23,825.7
SAWTIMBER					
		Million board feet[1/]			
National Forest	1,641.7	512.3	.2	33.4	1,095.8
Other federal	12.7	1.2	--	.4	11.1
State, county, and municipal	241.6	23.9	1.2	--	216.5
Forest industry	308.3	29.7	--	4.0	274.6
Farmer and miscellaneous private	3,082.2	251.3	18.9	166.2	2,645.8
All ownerships	5,286.5	818.4	20.3	204.0	4,243.8

1/ International 1/4-inch rule.

Table 25.--*Net volume of growing stock on commercial forest land, by species and diameter class, Eastern Ozarks, Missouri, 1972*

(Thousand cords)

Species	All classes	Diameter class (inches at breast height)											
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods:													
Shortleaf pine	3,103.3	476.0	772.1	833.3	622.2	223.5	109.5	45.9	20.8	--	--	--	--
Eastern redcedar	109.0	30.2	31.3	22.5	13.9	2.1	9.0	--	--	--	--	--	--
Total softwoods	3,212.3	506.2	803.4	855.8	636.1	225.6	118.5	45.9	20.8	--	--	--	--
Hardwoods:													
Select white oaks	6,333.9	1,300.7	1,298.4	1,239.1	936.1	789.5	404.7	170.6	69.7	53.5	47.2	24.4	--
Other white oaks	2,270.1	497.5	504.5	455.0	375.9	247.2	134.1	38.3	5.5	6.3	5.8	--	--
Select red oaks	840.6	117.0	103.3	149.1	112.5	110.2	98.4	53.2	39.3	12.8	39.3	5.5	--
Red oaks	10,898.4	1,220.3	1,764.1	2,419.0	2,246.3	1,562.3	912.1	357.3	182.5	48.4	77.5	10.1	98.5
Other red oaks	531.5	56.3	77.6	133.5	70.6	72.6	58.2	33.7	15.7	4.9	8.4	--	--
Hickory A	1,068.9	171.8	254.6	231.1	218.5	111.5	32.7	30.5	11.9	6.3	--	--	--
Hickory B	1,374.6	253.2	292.0	321.9	224.9	158.9	94.8	20.6	5.0	--	3.3	--	--
Hard maple	73.8	8.4	11.3	16.7	14.5	7.1	6.9	.6	--	5.1	3.2	--	--
Soft maple	47.7	16.1	5.1	2.6	3.0	--	6.2	3.0	--	7.7	4.0	--	--
Sweetgum	44.5	1.4	7.8	23.5	9.5	2.3	--	--	--	--	--	--	--
Tupelo and blackgum	206.8	33.8	21.5	16.5	39.9	32.0	36.3	15.3	--	4.6	6.9	--	--
Ash	129.4	16.1	26.3	29.8	14.9	28.7	2.2	11.4	--	--	--	--	--
Sycamore	296.5	16.4	29.5	48.0	58.6	32.3	47.4	23.0	20.0	4.5	12.1	4.7	--
Cottonwood	27.4	2.6	--	--	2.7	3.0	10.4	--	8.7	--	--	--	--
River birch	67.0	3.5	9.2	11.0	10.3	17.0	3.5	2.7	--	6.7	3.1	--	--
Black walnut	186.5	41.4	43.2	37.2	40.1	11.4	3.6	7.7	1.9	--	--	--	--
Black cherry	19.8	1.8	3.1	--	6.8	8.1	--	--	--	--	--	--	--
Elm	280.3	59.6	61.4	52.8	47.3	25.5	19.7	2.8	7.6	3.6	--	--	--
Other hardwoods	135.6	9.2	22.1	38.8	20.5	17.8	6.4	5.2	13.1	--	2.5	--	--
Total hardwoods	24,833.3	3,827.1	4,535.0	5,225.6	4,452.9	3,237.4	1,877.6	775.9	380.9	164.4	213.3	44.7	98.5
All species	28,045.6	4,333.3	5,338.4	6,081.4	5,089.0	3,463.0	1,996.1	821.8	401.7	164.4	213.3	44.7	98.5

Table 26.--*Net volume of sawtimber on commercial forest land, by species and diameter class, Eastern Ozarks, Missouri, 1972*

(Million board feet)[1/]

Species	All classes	Diameter class (inches at breast height)									
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods:											
Shortleaf pine	818.4	355.0	276.8	102.7	51.1	22.0	10.8	--	--	--	--
Eastern redcedar	20.3	9.0	6.2	.9	4.2	--	--	--	--	--	--
Total softwoods	838.7	364.0	283.0	103.6	55.3	22.0	10.8	--	--	--	--
Hardwoods:											
Select white oaks	1,005.1	--	398.7	314.9	154.5	66.7	27.9	17.2	18.0	7.2	--
Other white oaks	326.9	--	156.5	97.6	50.5	15.2	2.1	2.5	2.5	--	--
Select red oaks	179.8	--	44.4	43.9	40.3	21.2	14.3	4.2	10.7	.8	--
Red oaks	2,168.8	--	897.1	631.2	374.2	140.0	74.2	21.3	26.9	3.6	.3
Other red oaks	115.8	--	30.4	30.9	25.8	15.5	7.4	2.1	3.7	--	--
Hickory A	159.6	--	89.1	42.0	12.8	9.9	3.8	2.0	--	--	--
Hickory B	205.1	--	95.5	60.0	37.2	8.1	2.0	--	2.3	--	--
Hard maple	14.2	--	5.5	2.8	2.8	.2	--	1.9	1.0	--	--
Soft maple	9.6	--	1.1	--	2.5	1.2	--	2.8	2.0	--	--
Sweetgum	4.3	--	3.4	.9	--	--	--	--	--	--	--
Tupelo and blackgum	52.7	--	14.2	11.4	15.9	6.2	--	1.7	3.3	--	--
Ash	21.6	--	5.6	10.5	.9	4.6	--	--	--	--	--
Sycamore	69.4	--	18.8	11.9	18.7	8.2	6.6	1.6	2.8	.8	--
Cottonwood	9.7	--	1.0	1.2	4.2	--	3.3	--	--	--	--
River birch	17.2	--	3.9	6.5	1.2	1.4	--	3.2	1.0	--	--
Black walnut	22.7	--	12.5	5.1	1.1	3.1	.9	--	--	--	--
Black cherry	4.9	--	2.2	2.7	--	--	--	--	--	--	--
Elm	37.3	--	15.5	8.8	7.6	1.0	2.9	1.5	--	--	--
Other hardwoods	23.1	--	6.6	6.2	2.7	2.2	4.4	--	1.0	--	--
Total hardwoods	4,447.8	--	1,802.0	1,288.5	752.9	304.7	149.8	62.0	75.2	12.4	.3
All species	5,286.5	364.0	2,085.0	1,392.1	808.2	326.7	160.6	62.0	75.2	12.4	.3

1/ International 1/4-inch rule.

Table 27.--*Net volume of growing stock on commercial forest land, by species and forest type, Eastern Ozarks, Missouri, 1972*

(Million cubic feet)

Species	All forest types	Shortleaf pine	Eastern redcedar	Eastern redcedar-hardwood	Shortleaf pine-oak	Post-blackjack oak	Black-scarlet oak	White oak	Oak-gum-cypress	Elm-ash-cottonwood	Maple-beech	Non-stocked
Softwoods:												
Shortleaf pine	245.2	68.6	--	--	69.7	13.3	67.4	23.9	--	1.1	--	1.2
Eastern redcedar	8.6	.5	2.1	1.0	.3	.3	.5	.6	.1	1.1	1.6	.5
Total softwoods	253.8	69.1	2.1	1.0	70.0	13.6	67.9	24.5	.1	2.2	1.6	1.7
Hardwoods:												
Select white oaks	500.4	6.3	--	.2	14.5	22.4	186.5	261.7	.9	3.4	3.6	.9
Other white oaks	179.3	1.3	--	.5	6.0	81.7	71.3	17.1	--	.2	--	1.2
Select red oaks	66.4	--	--	--	1.5	1.3	37.6	24.3	--	.9	.8	--
Red oaks	861.0	8.6	--	--	30.6	58.1	656.7	100.2	.2	3.8	.9	1.9
Other red oaks	42.0	.4	--	--	1.6	15.3	9.7	2.7	11.5	.8	--	--
Hickory A	84.5	--	--	.4	2.0	10.6	42.7	25.7	1.0	1.1	.8	.2
Hickory B	108.6	1.3	--	.1	2.7	18.5	58.7	23.6	--	1.1	2.0	.6
Hard maple	5.8	--	.1	--	--	--	1.8	.6	--	.2	3.1	--
Soft maple	3.8	--	--	--	.2	.2	.6	.5	--	2.3	--	--
Sweetgum	3.5	--	--	--	--	.2	.3	.9	.9	.9	.3	--
Tupelo and blackgum	16.3	.7	--	--	.4	.3	7.3	7.2	--	--	.2	.2
Ash	10.2	--	.1	.2	--	.7	2.2	2.2	--	3.2	1.0	.6
Sycamore	23.4	--	--	--	--	.7	2.5	1.8	--	15.7	2.3	.4
Cottonwood	2.2	--	--	--	--	--	--	--	--	2.2	--	--
River birch	5.3	--	--	--	--	--	--	--	--	5.0	.3	--
Black walnut	14.7	--	--	.1	.2	.8	5.4	6.7	--	.7	.8	--
Black cherry	1.6	--	--	--	--	--	.6	.6	--	.3	.1	--
Elm	22.1	.5	--	.1	.1	2.1	4.6	7.6	.1	2.1	4.4	.5
Other hardwoods	10.7	--	--	--	--	.7	.5	1.1	--	6.4	2.0	--
Total hardwoods	1,961.8	19.1	.2	1.6	59.8	213.6	1,089.0	484.5	14.6	50.3	22.6	6.5
All species	2,215.6	88.2	2.3	2.6	129.8	227.2	1,156.9	509.0	14.7	52.5	24.2	8.2

Table 28.--*Net volume of sawtimber on commercial forest land, by species and forest type, Eastern Ozarks, Missouri, 1972*

(Million board feet)[1/]

Species	All forest types	Shortleaf pine	Eastern redcedar	Eastern redcedar-hardwood	Shortleaf pine-oak	Post-blackjack oak	Black-scarlet oak	White oak	Oak-gum-cypress	Elm-ash-cottonwood	Maple-beech	Non-stocked
Softwoods:												
Shortleaf pine	818.4	227.7	--	--	219.2	35.5	239.8	88.1	--	4.7	--	3.4
Eastern redcedar	20.3	.7	7.4	--	.9	--	1.8	1.7	--	1.6	3.7	2.5
Total softwoods	838.7	228.4	7.4	--	220.1	35.5	241.6	89.8	--	6.3	3.7	5.9
Hardwoods:												
Select white oaks	1,005.1	13.8	--	1.0	31.4	34.8	381.5	517.8	1.2	11.6	8.5	3.5
Other white oaks	326.9	2.1	--	2.2	7.5	148.5	131.1	34.3	--	1.2	--	--
Select red oaks	179.8	--	--	--	2.5	1.0	101.8	71.0	--	2.5	1.0	--
Red oaks	2,168.8	15.1	--	--	53.6	134.8	1,673.2	276.2	--	10.0	2.3	3.6
Other red oaks	115.8	--	--	--	2.3	27.4	17.2	10.4	55.5	3.0	--	--
Hickory A	159.6	--	--	2.0	6.2	19.4	76.8	48.1	3.2	3.2	.7	--
Hickory B	205.1	--	--	.6	4.8	36.2	113.5	43.0	--	1.9	4.1	1.0
Hard maple	14.2	--	--	--	--	--	4.3	--	--	--	9.9	--
Soft maple	9.6	--	--	--	--	--	--	--	--	9.6	--	--
Sweetgum	4.3	--	--	--	--	--	1.1	.9	1.5	.8	--	--
Tupelo and blackgum	52.7	1.4	--	--	.8	.7	26.5	21.4	--	--	1.1	.8
Ash	21.6	--	.3	--	--	1.0	6.1	4.3	--	9.9	--	--
Sycamore	69.4	--	--	--	--	2.9	4.5	3.1	--	48.9	8.4	1.6
Cottonwood	9.7	--	--	--	--	--	--	--	--	9.7	--	--
River birch	17.2	--	--	--	--	--	--	--	--	16.2	1.0	--
Black walnut	22.7	--	--	--	--	--	10.9	9.2	--	--	2.6	--
Black cherry	4.9	--	--	--	--	--	1.8	2.1	--	1.0	--	--
Elm	37.3	--	--	--	--	1.0	9.8	14.1	--	2.7	8.1	1.6
Other hardwoods	23.1	--	--	--	--	1.6	2.0	--	--	15.0	4.5	--
Total hardwoods	4,447.8	32.4	.3	5.8	109.1	409.3	2,562.1	1,055.9	61.4	147.2	52.2	12.1
All species	5,286.5	260.8	7.7	5.8	329.2	444.8	2,803.7	1,145.7	61.4	153.5	55.9	18.0

1/ International 1/4-inch rule.

Table 29.--*Net volume of timber in cull trees on commercial forest land, by species and cull tree class, Eastern Ozarks, Missouri, 1972*

(Million cubic feet)

Species	All cull trees	Rough trees	Short-log trees 1/	Rotten trees
Softwoods:				
Shortleaf pine	5.1	3.9	.3	.9
Eastern redcedar	1.9	1.6	--	.3
Total softwoods	7.0	5.5	.3	1.2
Hardwoods:				
Select white oaks	169.2	107.1	36.1	26.0
Other white oaks	120.3	84.0	19.0	17.3
Select red oaks	15.9	8.2	2.6	5.1
Red oaks	246.1	161.0	35.0	50.1
Other red oaks	48.5	34.1	4.8	9.6
Hickory A	30.1	21.5	5.1	3.5
Hickory B	45.9	32.7	7.3	5.9
Hard maple	10.2	8.1	1.4	.7
Soft maple	3.6	2.8	.2	.6
Sweetgum	1.2	.8	.2	.2
Tupelo and blackgum	10.7	5.6	1.9	3.2
Ash	9.3	7.0	1.5	.8
Sycamore	4.2	2.2	1.0	1.0
River birch	1.2	.6	.5	.1
Basswood	.2	--	--	.2
Black walnut	7.7	4.8	1.2	1.7
Black cherry	.8	.8	--	--
Elm	17.7	14.6	2.1	1.0
Other hardwoods	13.4	10.2	.5	2.7
Noncommercial species	3.3	3.1	--	.2
Total hardwoods	759.5	509.2	120.4	129.9
All species	766.5	514.7	120.7	131.1

1/ Volumes are for trees 9.0 inches d.b.h. and larger for softwoods and 11.0 inches d.b.h. and larger for hardwoods. Volumes for rough and rotten trees are for trees 5.0 inches d.b.h. and larger.

Table 30.--*Net volume of short-log trees on commercial forest land, by species and diameter class, Eastern Ozarks, Missouri, 1972*

(Million board feet)[1/]

Species	All classes	Diameter class (inches at breast height)									
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods:											
Shortleaf pine	2.5	--	1.1	--	--	1.4	--	--	--	--	--
Total softwoods	2.5	--	1.1	--	--	1.4	--	--	--	--	--
Hardwoods:											
Select white oaks	122.4	--	51.8	37.3	16.0	8.6	3.2	2.3	2.7	.5	--
Other white oaks	69.4	--	26.4	23.2	14.3	3.6	.9	.5	.5	--	--
Select red oaks	9.5	--	3.2	1.9	3.8	--	--	--	--	.6	--
Red oaks	119.8	--	47.5	29.3	17.0	10.7	6.0	5.3	2.8	1.2	--
Other red oaks	16.3	--	9.1	.7	2.7	3.3	.5	--	--	--	--
Hickory A	17.2	--	8.3	2.9	2.1	.8	1.9	--	1.2	--	--
Hickory B	23.5	--	14.6	4.5	3.9	.5	--	--	--	--	--
Hard maple	3.4	--	.6	1.3	1.2	--	--	.3	--	--	--
Soft maple	.7	--	.7	--	--	--	--	--	--	--	--
Sweetgum	.6	--	--	.6	--	--	--	--	--	--	--
Tupelo and blackgum	6.2	--	2.3	1.7	.5	1.2	--	.5	--	--	--
Ash	3.9	--	2.3	1.3	--	.3	--	--	--	--	--
Sycamore	1.6	--	.9	--	--	--	--	--	--	--	.7
River birch	1.3	--	.7	--	.6	--	--	--	--	--	--
Black walnut	3.5	--	2.3	.6	.6	--	--	--	--	--	--
Elm	6.0	--	1.6	1.7	2.7	--	--	--	--	--	--
Other hardwoods	1.6	--	.5	.6	.5	--	--	--	--	--	--
Total hardwoods	406.9	--	172.8	107.6	65.9	29.0	12.5	8.9	7.2	2.3	.7
All species	409.4	--	173.9	107.6	65.9	30.4	12.5	8.9	7.2	2.3	.7

1/ International 1/4-inch rule.

Table 31.--*Net volume of sawtimber on commercial forest land, by species and log grade class, Eastern Ozarks, Missouri, 1972*

(Million board feet)[1/]

Species	All grades	Log Grade 1	Log Grade 2	Log Grade 3	Tie and timber
Softwoods:					
Shortleaf pine	818.4	122.4	115.5	580.5	--
Eastern redcedar	20.3	--	14.6	5.6	.1
Total softwoods	838.7	122.4	130.1	586.1	.1
Hardwoods:					
Select white oaks	1,005.1	74.2	214.6	469.6	246.7
Other white oaks	326.9	10.0	37.6	217.0	62.3
Select red oaks	179.8	18.7	51.4	86.4	23.3
Red oaks	2,168.8	77.4	491.8	1,050.3	549.3
Other red oaks	115.8	7.9	17.9	36.9	53.1
Hickory A	159.6	--	26.0	85.7	47.9
Hickory B	205.1	2.1	36.1	106.3	60.6
Hard maple	14.2	--	1.4	8.0	4.8
Soft maple	9.6	--	6.7	--	2.9
Sweetgum	4.3	--	--	--	4.3
Tupelo and blackgum	52.7	--	36.1	--	16.6
Ash	21.6	1.1	9.9	10.6	--
Sycamore	69.4	18.2	21.2	29.2	.8
Cottonwood	9.7	.7	1.6	4.8	2.6
River birch	17.2	.7	10.4	2.1	4.0
Black walnut	22.7	1.5	6.4	14.8	--
Black cherry	4.9	--	3.0	1.9	--
Elm	37.3	.4	11.9	17.3	7.7
Other hardwoods	23.1	3.0	7.9	9.1	3.1
Total hardwoods	4,447.8	215.9	991.9	2,150.0	1,090.0
All species	5,286.5	338.3	1,122.0	2,736.1	1,090.1

1/ International 1/4-inch rule.

Table 32.--*Walnut volume on nonforest land, by diameter class and class of timber, Eastern Ozarks, Missouri, 1972*

Diameter class (inches at breast height)	Growing stock trees	Sawtimber trees	Rough trees	Rotten trees
	Thousand cubic feet	Thousand board feet[1/]	Thousand cubic feet	Thousand cubic feet
5.0-6.9	--	--	507	--
7.0-8.9	618	--	786	--
9.0-10.9	669	--	1,243	224
11.0-12.9	--	--	588	132
13.0-14.9	224	1,207	864	--
15.0-16.9	937	5,788	702	--
17.0-18.9	--	--	--	73
19.0-20.9	--	--	403	--
21.0-22.9	--	--	446	--
23.0+	--	--	339	53
All diameters	2,448	6,995	5,878	482

1/ International 1/4-inch rule.

Table 33.--*Net annual growth of growing stock and sawtimber on commercial forest land, by species and county, Eastern Ozarks, Missouri, 1971*

Species	All counties		Bollinger		Butler		Carter		Crawford	
	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber
	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/
Softwoods:										
Shortleaf pine	104,312	21,192	3,688	773	5,636	1,133	7,657	1,537	5,808	1,212
Eastern redcedar	3,830	241	240	17	454	28	237	7	287	25
Total softwoods	108,142	21,433	3,928	790	6,090	1,161	7,894	1,544	6,095	1,237
Hardwoods:										
Select white oaks	171,794	17,738	8,431	936	6,409	696	10,331	1,062	13,858	1,435
Other white oaks	38,190	3,110	1,865	155	1,345	111	2,312	190	3,106	249
Select red oaks	28,936	4,875	1,476	265	1,144	201	1,731	285	2,365	405
Red oaks	446,328	62,598	21,251	3,203	16,334	2,222	27,027	3,769	35,930	5,128
Other red oaks	12,008	2,748	954	275	2,539	890	514	85	676	116
Hickory A	25,708	1,714	1,338	98	965	76	1,531	98	2,118	141
Hickory B	29,190	2,237	1,432	114	1,102	80	1,765	133	2,344	180
Hard maple	2,159	423	202	40	145	33	79	13	171	34
Soft maple	1,183	191	81	16	115	29	49	4	126	26
Sweetgum	919	90	71	8	189	23	38	3	58	5
Tupelo and blackgum	3,330	852	173	46	138	35	201	51	263	68
Ash	3,768	672	259	49	463	82	162	28	319	65
Sycamore	16,789	3,111	1,082	234	1,631	371	716	108	1,687	339
Cottonwood	418	122	35	10	63	19	12	4	51	15
River birch	2,804	719	197	52	370	99	25	5	404	104
Black walnut	3,329	404	182	23	150	16	188	23	275	34
Black cherry	394	113	21	6	18	5	22	6	34	10
Elm	3,069	546	171	42	268	62	159	24	237	47
Other hardwoods	4,493	269	264	22	369	40	217	9	397	27
Total hardwoods	794,809	102,532	39,485	5,594	33,757	5,090	47,079	5,900	64,419	8,428
All species	902,951	123,965	43,413	6,384	39,847	6,251	54,973	7,444	70,514	9,665

(Table 33 cont. on next page)

(Table 33 cont.)

Species	Dent		Iron		Madison		Oregon		Reynolds	
	Growing stock	Saw-timber	Growing stock	Saw-timber	Growing stock	Saw-timber	Growing stock	Saw-timber	Growing stock	Saw-timber
	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/
Softwoods:										
Shortleaf pine	6,599	1,380	6,813	1,288	8,036	1,483	7,898	1,648	9,652	1,994
Eastern redcedar	154	9	296	17	388	19	196	12	278	22
Total softwoods	6,753	1,389	7,109	1,305	8,424	1,502	8,094	1,660	9,930	2,016
Hardwoods:										
Select white oaks	13,201	1,298	12,806	1,278	9,575	988	12,113	1,273	18,874	1,938
Other white oaks	3,035	243	2,853	226	2,051	161	2,855	233	4,115	332
Select red oaks	2,188	359	2,145	358	1,596	264	2,032	339	3,194	544
Red oaks	34,731	4,747	33,597	4,629	25,125	3,457	31,638	4,487	48,902	6,936
Other red oaks	641	105	605	98	477	77	628	105	975	181
Hickory A	1,937	119	1,874	122	1,413	98	1,850	118	2,825	190
Hickory B	2,255	174	2,132	164	1,597	120	2,115	163	3,155	243
Hard maple	115	22	132	25	191	42	109	20	236	47
Soft maple	59	5	66	8	73	13	75	10	113	16
Sweetgum	46	4	44	4	35	3	46	4	75	7
Tupelo and blackgum	240	61	235	60	192	49	237	61	362	93
Ash	203	33	215	36	205	38	223	43	353	62
Sycamore	930	143	908	158	957	196	1,084	186	1,526	278
Cottonwood	14	4	18	5	25	7	25	7	34	10
River birch	68	16	155	40	267	69	99	25	273	69
Black walnut	242	29	233	28	191	22	238	29	358	45
Black cherry	29	8	28	8	22	6	26	7	43	13
Elm	205	32	187	36	181	33	198	28	298	58
Other hardwoods	288	12	220	13	226	16	354	15	399	24
Total hardwoods	60,427	7,414	58,453	7,296	44,399	5,659	55,945	7,153	86,110	11,086
All species	67,180	8,803	65,562	8,601	52,823	7,161	64,039	8,813	96,040	13,102

(Table 33 cont. below)

(Table 33 cont.)

Species	Ripley		St. Francois		Shannon		Washington		Wayne	
	Growing stock	Saw-timber	Growing stock	Saw-timber	Growing stock	Saw-timber	Growing stock	Saw-timber	Growing stock	Saw-timber
	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/
Softwoods:										
Shortleaf pine	8,567	1,753	2,626	513	11,452	2,352	9,458	2,006	10,422	2,120
Eastern redcedar	220	23	239	9	237	18	292	23	312	12
Total softwoods	8,787	1,776	2,865	522	11,689	2,370	9,750	2,029	10,734	2,132
Hardwoods:										
Select white oaks	10,822	1,101	5,328	538	19,956	2,039	15,470	1,630	14,620	1,526
Other white oaks	2,387	196	1,284	108	4,611	376	3,284	272	3,087	258
Select red oaks	1,796	297	916	149	3,319	550	2,598	446	2,436	413
Red oaks	28,231	3,873	14,035	1,945	52,564	7,247	39,633	5,715	37,330	5,240
Other red oaks	740	161	298	49	975	162	730	121	1,256	323
Hickory A	1,593	103	834	54	2,939	183	2,342	165	2,149	149
Hickory B	1,881	139	942	73	3,408	265	2,631	203	2,431	186
Hard maple	138	28	72	14	154	27	257	48	158	30
Soft maple	93	18	52	11	97	9	98	14	86	12
Sweetgum	62	6	29	2	72	6	58	5	96	10
Tupelo and blackgum	218	55	96	25	372	95	314	80	289	73
Ash	266	50	147	26	324	55	302	51	327	54
Sycamore	1,437	265	822	147	1,447	223	1,336	246	1,226	217
Cottonwood	36	11	22	6	24	7	30	9	29	8
River birch	307	80	156	39	129	32	244	63	110	26
Black walnut	213	25	113	13	370	44	302	39	274	34
Black cherry	26	7	14	4	43	13	36	11	32	9
Elm	235	34	106	11	298	48	264	45	262	46
Other hardwoods	376	21	214	11	402	18	407	20	360	21
Total hardwoods	50,857	6,470	25,480	3,225	91,504	11,399	70,336	9,183	66,558	8,635
All species	59,644	8,246	28,345	3,747	103,193	13,769	80,086	11,212	77,292	10,767

1/ International 1/4-inch rule.

Table 34.--*Timber removals from growing stock and sawtimber on commercial forest land, by item and species group, Eastern Ozarks, Missouri, 1971*[1/]

Item	Growing stock					Sawtimber				
	All species	Shortleaf pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Shortleaf pine	Other softwoods	Soft hardwoods	Hard hardwoods
	Cords					Thousand board feet[2/]				
Roundwood products:										
Saw logs	298,350	17,591	418	20,506	259,835	114,855	8,301	158	10,170	96,226
Cooperage logs	23,670	--	--	1,152	22,518	11,525	--	--	437	11,088
Veneer logs	304	--	--	152	152	112	--	--	55	57
Pulpwood	4,777	865	--	797	3,115	1,441	94	--	274	1,073
Charcoal wood	31,823	--	--	291	31,532	3,689	--	--	40	3,649
Posts	7,481	4,354	13	--	3,114	919	205	1	12	701
Fuelwood	23,342	--	63	1,823	21,456	4,385	--	7	337	4,041
Poles	1,291	1,291	--	--	--	173	173	--	--	--
Mine timbers	709	--	--	--	709	69	--	--	--	69
Handle bolts	3,468	--	--	316	3,152	1,343	--	--	129	1,214
Miscellaneous[3/]	911	--	--	--	911	392	--	--	--	392
All products	396,126	24,101	494	25,037	346,494	138,903	8,773	166	11,454	118,510
Logging residues	96,899	1,975	10	3,156	91,758	11,644	222	1	382	11,039
Other removals	24,696	--	--	1,960	22,736	5,853	--	--	464	5,389
Total removals	517,721	26,076	504	30,153	460,988	156,400	8,995	167	12,300	134,938

1/ See glossary for timber removals from growing stock (page 5).
2/ International 1/4-inch rule.
3/ Includes shaving wood, heading bolts, etc.

Table 35.--*Timber removals from growing stock and sawtimber on commercial forest land, by species and county, Eastern Ozarks, Missouri, 1971*[1/]

Species	All counties		Bollinger		Butler		Carter		Crawford	
	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber
	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/
Softwoods:										
Shortleaf pine	26,076	8,995	292	122	1,594	458	3,026	1,055	21	8
Cypress	111	44	60	25	41	18	--	--	--	--
Eastern redcedar	393	123	20	2	--	--	--	--	20	2
Total softwoods	26,580	9,162	372	149	1,635	476	3,026	1,055	41	10
Hardwoods:										
Select white oaks	100,021	29,390	6,822	2,142	3,925	1,084	7,696	2,356	7,010	2,021
Other white oaks	53,865	15,827	3,662	1,148	2,102	578	4,156	1,273	3,768	1,086
Select red oaks	18,272	5,186	953	286	666	196	1,147	331	1,139	297
Red oaks	221,881	62,976	11,577	3,473	8,091	2,386	13,933	4,024	13,826	3,601
Other red oaks	20,883	5,927	1,090	327	762	225	1,311	378	1,301	339
Hickory A	17,904	6,059	1,531	571	588	204	2,993	1,054	868	239
Hickory B	21,017	7,112	1,798	670	690	239	3,513	1,238	1,018	281
Hard maple	2,874	1,101	519	197	38	17	--	--	949	365
Soft maple	2,393	1,062	392	181	570	239	--	--	266	123
Beech	76	30	76	30	--	--	--	--	--	--
Sweetgum	5,153	2,098	1,152	534	2,392	891	--	3	--	--
Tupelo and blackgum	4,559	1,965	412	189	153	73	150	49	162	61
Ash	1,899	651	532	201	278	82	89	24	101	22
Sycamore	9,101	4,064	1,253	573	620	259	139	42	2,278	1,052
Cottonwood	1,014	432	122	55	267	98	3	1	36	14
River birch	291	114	114	50	139	39	--	--	13	8
Yellow-poplar	152	70	127	60	--	--	--	--	--	--
Basswood	13	8	--	--	--	--	--	--	13	8
Black walnut	772	276	--	1	76	28	76	28	--	--
Black cherry	140	64	25	13	--	--	--	3	--	--
Elm	5,583	2,057	1,038	464	1,392	528	190	33	380	131
Other hardwoods	3,278	769	216	52	339	101	129	24	313	77
Total hardwoods	491,141	147,238	33,411	11,217	23,088	7,267	35,525	10,861	33,441	9,725
All species	517,721	156,400	33,783	11,366	24,723	7,743	38,551	11,916	33,482	9,735

(Table 35 cont. on next page)

(Table 35 cont.)

Species	Dent		Iron		Madison		Oregon		Reynolds	
	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber
	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/
Softwoods:										
Shortleaf pine	1,614	394	847	317	3,944	1,423	1,836	457	3,248	1,295
Cypress	--	--	--	--	--	--	--	--	--	--
Eastern redcedar	--	--	--	--	--	--	--	--	--	--
Total softwoods	1,614	394	847	317	3,944	1,423	1,836	457	3,248	1,295
Hardwoods:										
Select white oaks	8,458	2,190	3,897	1,004	3,982	1,116	11,486	3,187	10,689	3,283
Other white oaks	4,572	1,184	2,090	541	2,134	601	6,226	1,724	5,732	1,765
Select red oaks	1,825	406	719	212	844	253	1,832	537	2,067	618
Red oaks	22,165	4,927	8,726	2,576	10,242	3,068	22,251	6,524	25,101	7,498
Other red oaks	2,086	464	821	242	964	289	2,094	614	2,362	706
Hickory A	868	186	1,386	491	914	326	1,019	336	2,207	788
Hickory B	1,018	219	1,627	576	1,073	383	1,196	394	2,590	926
Hard maple	--	--	51	20	646	244	--	--	190	73
Soft maple	--	--	--	--	13	4	--	--	--	--
Beech	--	--	--	--	--	--	--	--	--	--
Sweetgum	13	4	--	1	25	13	13	5	127	59
Tupelo and blackgum	183	77	246	100	592	271	208	87	1,066	474
Ash	--	1	25	8	177	66	89	35	177	68
Sycamore	228	103	253	114	823	376	418	193	886	403
Cottonwood	3	1	4	2	81	37	94	45	7	2
River birch	--	--	--	3	--	2	--	--	--	--
Yellow-poplar	--	--	--	--	--	--	--	--	--	--
Basswood	--	--	--	--	--	--	--	--	--	--
Black walnut	76	28	--	--	13	5	76	28	101	34
Black cherry	13	5	13	4	13	3	--	--	76	34
Elm	165	36	203	58	190	74	253	88	354	146
Other hardwoods	235	55	209	41	168	45	208	42	267	68
Total hardwoods	41,908	9,886	20,270	5,993	22,894	7,176	47,463	13,839	53,999	16,945
All species	43,522	10,280	21,117	6,310	26,838	8,599	49,299	14,296	57,247	18,240

(Table 35 cont. on next page)

(Table 35 cont.)

Species	Ripley		St. Francois		Shannon		Washington		Wayne	
	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber
	Cords	Thousand bd. ft. 1/	Cords	Thousand bd. ft. 1/	Cords	Thousand bd. ft. 1/	Cords	Thousand bd. ft. 1/	Cords	Thousand bd. ft. 1/
Softwoods:										
Shortleaf pine	918	349	111	47	4,974	1,585	1,039	437	2,612	1,048
Cypress	10	1	--	--	--	--	--	--	--	--
Eastern redcedar	--	--	10	2	--	--	343	117	--	--
Total softwoods	928	350	121	49	4,974	1,585	1,382	554	2,612	1,048
Hardwoods:										
Select white oaks	6,882	2,002	6,014	2,180	8,109	2,337	6,333	1,983	8,718	2,505
Other white oaks	3,714	1,079	3,260	1,179	4,396	1,262	3,386	1,064	4,667	1,343
Select red oaks	1,664	499	96	27	2,620	718	490	144	2,210	662
Red oaks	20,206	6,064	1,162	324	31,816	8,714	5,950	1,753	26,835	8,044
Other red oaks	1,902	571	109	30	2,995	820	560	165	2,526	757
Hickory A	1,514	514	169	60	1,082	296	506	177	2,259	817
Hickory B	1,777	602	198	71	1,273	346	594	207	2,652	960
Hard maple	--	1	51	21	--	--	215	79	215	84
Soft maple	1,000	443	--	--	--	--	--	--	152	72
Beech	--	--	--	--	--	--	--	--	--	--
Sweetgum	962	401	--	--	13	4	--	--	456	183
Tupelo and blackgum	394	169	55	26	271	108	57	14	610	267
Ash	190	63	--	2	76	25	--	--	165	54
Sycamore	861	358	278	130	89	36	203	90	772	335
Cottonwood	8	3	207	95	5	1	6	2	171	76
River birch	--	--	--	2	--	--	--	--	25	10
Yellow-poplar	--	--	--	--	--	--	--	--	25	10
Basswood	--	--	--	--	--	--	--	--	--	--
Black walnut	76	28	63	21	76	28	63	19	76	28
Black cherry	--	--	--	2	--	--	--	--	--	--
Elm	709	264	76	19	101	31	165	39	367	146
Other hardwoods	333	80	150	36	209	39	268	60	234	49
Total hardwoods	42,192	13,141	11,888	4,225	53,131	14,765	18,796	5,796	53,135	16,402
All species	43,120	13,491	12,009	4,274	58,105	16,350	20,178	6,350	55,747	17,450

1/ International 1/4-inch rule.

Table 36.--*Annual mortality of growing stock and sawtimber on commercial forest land, by cause and softwoods and hardwoods, Eastern Ozarks, Missouri, 1971*

Cause	Growing stock			Sawtimber		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cubic feet			Thousand board feet[1/]		
Disease	1,626	--	1,626	2,215	--	2,215
Fire	161	--	161	185	--	185
Weather	311	76	235	1,395	439	956
Suppression	38	38	--	--	--	--
Unknown and other	902	140	762	338	--	338
Logging	209	51	158	328	--	328
All causes	3,247	305	2,942	4,461	439	4,022

1/ International 1/4-inch rule.

Table 37.--*Annual mortality of growing stock and sawtimber on commercial forest land, by species, Eastern Ozarks, Missouri, 1971*

Species	Growing stock	Sawtimber
	Thousand cubic feet	Thousand board feet[1/]
Softwoods:		
Shortleaf pine	246	439
Eastern redcedar	59	--
Total softwoods	305	439
Hardwoods:		
Select white oaks	441	252
Other white oaks	446	391
Red oaks	1,128	2,297
Other red oaks	195	223
Hickory A	180	253
Hickory B	195	328
Sycamore	57	--
Black walnut	71	--
Elm	229	278
Total hardwoods	2,942	4,022
All species	3,247	4,461

1/ International 1/4-inch rule.

Table 38.--*Output of timber products by source of material and softwoods and hardwoods, Eastern Ozarks, Missouri, 1969*

Product and species group	Standard unit[1/]	Total		Roundwood products				Plant byproducts	
				Growing stock		Nongrowing stock			
		No. of units	M cu. ft.	No. of units	M cu. ft.	No. of units	M cu. ft.	No. of units	M cu. ft.
Saw logs:	M bd. ft.								
Softwood		11,187	1,949	11,187	1,949	--	--	--	--
Hardwood		180,179	31,850	125,050	22,147	55,129	9,703	--	--
Total		191,366	33,799	136,237	24,096	55,129	9,703	--	--
Veneer logs:	M bd. ft.								
Softwood		---	--	--	--	--	--	--	--
Hardwood		114	24	114	24	--	--	--	--
Total		114	24	114	24	--	--	--	--
Cooperage logs:	M bd. ft.								
Softwood		--	--	--	--	--	--	--	--
Hardwood		14,574	2,415	13,150	2,179	1,424	236	--	--
Total		14,574	2,415	13,150	2,179	1,424	236	--	--
Pulpwood:	Std. cords								
Softwood		--	--	--	--	--	--	--	--
Hardwood		14,178	1,120	--	--	--	--	14,178	1,120
Total		14,178	1,120	--	--	--	--	14,178	1,120
Poles:	M pieces								
Softwood		43,200	128	43,200	128	--	--	--	--
Hardwood		--	--	--	--	--	--	--	--
Total		43,200	128	43,200	128	--	--	--	--
Mine timbers:	M cu. ft.								
Softwood		--	--	--	--	--	--	--	--
Hardwood		73	73	56	56	17	17	--	--
Total		73	73	56	56	17	17	--	--
Posts:	M pieces								
Softwood		832	635	567	433	265	202	--	--
Hardwood		624	343	445	246	179	97	--	--
Total		1,456	978	1,012	679	444	299	--	--
Charcoal wood:	Std. cords								
Softwood		629	44	--	--	--	--	629	44
Hardwood		137,002	9,578	35,971	2,514	76,831	5,370	24,200	1,694
Total		137,631	9,622	35,971	2,514	76,831	5,370	24,829	1,738
Other:[2/]	M cu. ft.								
Softwood		4	4	--	--	--	--	4	4
Hardwood		496	496	346	346	30	30	120	120
Total		500	500	346	346	30	30	124	124
Fuelwood:	Std. cords								
Softwood		287	22	73	6	106	9	108	7
Hardwood		98,944	6,440	28,248	1,839	60,973	3,969	9,723	632
Total		99,231	6,462	28,321	1,845	61,079	3,978	9,831	639
All products:	M cu. ft.								
Softwood		2,782	2,782	2,516	2,516	211	211	55	55
Hardwood		52,339	52,339	29,351	29,351	19,422	19,422	3,566	3,566
Total		55,121	55,121	31,867	31,867	19,633	19,633	3,621	3,621

1/ M (meaning thousand) board feet by International 1/4-inch rule. Cords are on a roughwood, 128-cubic-foot basis.

2/ Other (industrial production) includes handle bolts, shaving bolts, heading stock, etc.

Table 39.--*Forest products harvested by ownership class and product, Eastern Ozarks, Missouri, 1969*

Ownership class	Saw logs	Cooperage logs	Veneer logs	Pulp-wood	Charcoal wood	Posts	Fuel-wood	Poles	Mine timbers	Handle bolts	Miscellaneous
	M bd.ft.[1]	M bd.ft.[1]	M bd.ft.[1]	Cords[2]	Cords[2]	M pieces	Cords[2]	Pieces	M cu.ft.	M bd.ft.[1]	M cu.ft.
Federal:											
National Forest:											
Softwoods	5,079	--	--	--	--	411	--	400	--	--	--
Hardwoods	20,982	16	11	--	1,852	--	5,210	--	--	--	--
Corps of Engineers:											
Hardwoods	14	4	--	--	--	--	--	--	--	--	--
Total	26,075	20	11	--	1,852	411	5,210	400	--	--	--
State:											
Softwoods	126	--	--	--	--	14	--	--	--	--	--
Hardwoods	1,457	69	--	--	481	--	8	--	--	100	--
Total	1,583	69	--	--	481	14	8	--	--	100	--
Private:											
Industrial:											
Softwoods	228	--	--	--	--	--	--	--	--	--	--
Hardwoods	9,721	135	--	--	15,670	--	--	--	--	--	--
Farm and other:											
Softwoods	5,754	--	--	--	--	407	179	42,800	--	--	--
Hardwoods	148,005	14,350	103	--	94,799	624	84,003	--	73	1,821	72
Total	163,708	14,485	103	--	110,469	1,031	84,182	42,800	73	1,821	72
All owners:											
Softwoods	11,187	--	--	--	--	832	179	43,200	--	--	--
Hardwoods	180,179	14,574	114	--	112,802	624	89,221	--	73	1,921	72
Total	191,366	14,574	114	--	112,802	1,456	89,400	43,200	73	1,921	72

1/ International 1/4-inch rule.
2/ Standard cords, rough wood basis.

Table 40.--*Volume of primary plant residue, by kind of material and type of use, Eastern Ozarks, Missouri, 1969*

(Thousand cubic feet)

Source industry and kind of residue	Volume by type of use								
	Fiber[1]		Charcoal		Fuel[2]		Other[3]		Not used[4]
	Hard-woods	Soft-woods	Hard-woods	Soft-woods	Hard-woods	Soft-woods	Hard-woods	Soft-woods	Hard-woods
Lumber:									
Coarse	971	44	1,532	6	392	1	5	323	3,755
Fine	86	--	--	1	13	3	97	273	4,404
Total	1,057	44	1,532	7	405	4	102	596	8,159
All other:									
Coarse	63	--	120	--	144	--	--	--	70
Fine	--	--	42	--	83	--	18	--	445
Total	63	--	162	--	227	--	18	--	515
All industries:									
Coarse	1,034	44	1,652	6	536	1	5	323	3,825
Fine	86	--	42	1	96	3	115	273	4,849
Total	1,120	44	1,694	7	632	4	120	596	8,674

1/ For manufacture of pulp, hardboard, or roofing felt.
2/ All residue used for industrial or domestic fuel whether sold or given away.
3/ Includes uses such as livestock bedding, mulch, small dimension, and specialty items.
4/ Includes residue burned as waste.

Table 41.--*Timber products output from roundwood, by species and product, Eastern Ozarks, Missouri, 1969*

Species	Saw logs		Veneer logs		Cooperage logs		Charcoal wood		Other products 3/	All products
	M bd. ft. 1/	M cu. ft.	M bd. ft. 1/	M cu. ft.	M bd. ft. 1/	M cu. ft.	Cords 2/	M cu. ft.	M cu. ft.	M cu. ft.
Softwoods:										
Shortleaf pine	10,535	1,829	0	0	0	0	0	0	762	2,591
Cypress	52	9	0	0	0	0	0	0	1	10
Eastern redcedar	152	33	0	0	0	0	0	0	15	48
Other softwoods	448	78	0	0	0	0	0	0	0	78
Total softwoods	11,187	1,949	0	0	0	0	0	0	778	2,727
Hardwoods:										
White oaks	37,858	6,757	0	0	13,478	2,222	21,464	1,505	4,242	14,726
Red oaks	46,346	8,269	0	0	0	0	6,822	474	387	9,130
Black oak	71,780	12,812	0	0	0	0	69,237	4,846	821	18,479
Hickory	10,204	1,745	56	12	0	0	13,867	968	552	3,277
Hard maple	1,042	177	0	0	0	0	10	0	0	177
Soft maple	1,124	179	0	0	47	9	0	0	4	192
Beech	28	4	0	0	0	0	0	0	0	4
Sweetgum	1,853	295	6	1	571	98	0	0	4	398
Blackgum	2,018	316	0	0	0	0	162	9	1	326
Ash	487	80	0	0	47	9	235	16	25	130
Cottonwood	360	55	0	0	47	9	0	0	0	64
Basswood	9	1	0	0	0	0	0	0	0	1
Yellow-poplar	79	12	0	0	0	0	0	0	0	12
Black walnut	587	129	3	0	0	0	1	0	0	129
Black cherry	72	11	0	0	0	0	20	1	0	12
Elm	1,799	286	0	0	189	33	684	46	307	672
Birch	91	13	0	0	47	9	0	0	0	22
Sycamore	4,358	696	49	11	148	26	300	19	3	755
Other hardwoods	84	13	0	0	0	0	0	0	254	267
Total hardwoods	180,179	31,850	114	24	14,574	2,415	112,802	7,884	6,600	48,773
All species	191,366	33,799	114	24	14,574	2,415	112,802	7,884	7,378	51,500

1/ International 1/4-inch rule.
2/ Standard cords, rough wood basis.
3/ Includes posts, fuelwood, shaving bolts, heading bolts, etc.

Table 42.--*Average annual allowable cut for 1972-1981 from harvest cuttings and thinnings, on commercial forest land, by species and kind of material, Eastern Ozarks, Missouri*

Species	Growing stock[1]			Sawtimber[1]	Rough and rotten trees		
	Total	Poletimber trees	Sawtimber trees	Total	Total	Short-log trees	Other
	Cords			Thousand board feet[2]	Cords		
Softwoods:							
Shortleaf pine	76,076	21,595	54,481	23,015	2,911	51	2,860
Eastern redcedar	1,924	1,342	582	230	684	--	684
Total softwoods	78,000	22,937	55,063	23,245	3,595	51	3,544
Hardwoods:							
Select white oaks	164,519	71,380	93,139	35,540	59,797	13,936	45,861
Other white oaks	56,620	23,911	32,709	12,360	37,759	6,810	30,949
Select red oaks	24,025	5,266	18,759	7,265	7,481	1,810	5,671
Red oaks	285,177	94,823	190,354	75,068	95,532	15,836	79,696
Other red oaks	10,582	2,481	8,101	3,466	9,671	1,127	8,544
Hickory A	21,215	9,759	11,456	4,011	6,975	949	6,026
Hickory B	35,785	17,836	17,949	7,003	15,797	2,886	12,911
Hard maple	2,278	962	1,316	518	5,532	886	4,646
Soft maple	1,013	759	254	97	1,962	266	1,696
Sweetgum	962	506	456	174	734	215	519
Tupelo and blackgum	5,608	1,253	4,355	1,662	4,443	886	3,557
Ash	4,557	2,278	2,279	828	4,329	937	3,392
Sycamore	9,316	2,519	6,797	2,107	1,722	342	1,380
River birch	1,975	646	1,329	504	1,139	595	544
Basswood	--	--	--	--	177	--	177
Black walnut	5,304	2,646	2,658	852	2,139	709	1,430
Black cherry	633	--	633	252	532	--	532
Elm	6,608	2,620	3,988	1,425	5,469	1,051	4,418
Other hardwoods	2,494	1,317	1,177	391	7,468	177	7,291
Noncommercial species	--	--	--	--	228	--	228
Total hardwoods	638,671	240,962	397,709	153,523	268,886	49,418	219,468
All species	716,671	263,899	452,772	176,768	272,481	49,469	223,012

1/ Cuttings of less than 3 cords per acre, or the equivalent in board feet, are excluded.
2/ International 1/4-inch rule.

Table 43.--*Average annual allowable cut of growing stock for 1972-1981 from harvest cuttings and thinnings, on commercial forest land, by species and forest type, Eastern Ozarks, Missouri*[1/]

(Thousand cubic feet)

Species	All forest types	Shortleaf pine	Eastern redcedar	Eastern redcedar-hardwood	Shortleaf pine-oak	Post-blackjack oak	Black-scarlet oak	White oak	Oak-gum-cypress	Elm-ash-cottonwood	Maple-beech
Softwoods:											
Shortleaf pine	6,010	2,194	--	--	1,934	300	1,083	407	--	92	--
Eastern redcedar	152	33	26	27	28	--	--	--	--	10	28
Total softwoods	6,162	2,227	26	27	1,962	300	1,083	407	--	102	28
Hardwoods:											
Select white oaks	12,997	224	--	--	455	475	5,322	6,230	--	192	99
Other white oaks	4,473	34	--	43	198	2,528	1,303	356	--	11	--
Select red oaks	1,898	--	--	--	--	--	1,377	493	--	28	--
Red oaks	22,529	378	--	--	948	1,520	16,968	2,421	--	242	52
Other red oaks	836	15	--	--	23	272	81	44	401	--	--
Hickory A	1,676	--	--	--	56	243	726	551	16	84	--
Hickory B	2,827	45	--	--	92	570	1,562	496	--	18	44
Hard maple	180	--	4	--	--	--	67	--	--	--	109
Soft maple	80	--	--	--	15	--	--	35	--	30	--
Sweetgum	76	--	--	--	--	--	23	--	33	7	13
Tupelo and blackgum	443	39	--	--	--	16	136	228	--	--	24
Ash	360	--	4	20	--	49	80	72	--	97	38
Sycamore	736	--	--	--	--	26	105	--	--	426	179
River birch	156	--	--	--	--	--	--	--	--	126	30
Black walnut	419	--	--	--	7	--	145	175	--	51	41
Black cherry	50	--	--	--	--	--	35	7	--	8	--
Elm	522	20	--	--	15	19	118	140	--	44	166
Other hardwoods	197	--	--	--	--	12	--	13	--	57	115
Total hardwoods	50,455	755	8	63	1,809	5,730	28,048	11,261	450	1,421	910
All species	56,617	2,982	34	90	3,771	6,030	29,131	11,668	450	1,523	938

1/ Cuttings of less than 240 cubic feet per acre are excluded.

Table 44.--*Average annual allowable cut of growing stock for 1972-1981 from harvest cuttings and thinnings, on commercial forest land, by species and stand-volume class, Eastern Ozarks, Missouri* 1/

(Thousand cubic feet)

Species	All classes	Stand-volume class (cubic feet per acre)					
		240-399	400-799	800-1,199	1,200-1,599	1,600+
Softwoods:						
Shortleaf pine	6,010	1,044	2,382	1,918	97	569
Eastern redcedar	152	54	70	28	--	--
Total softwoods	6,162	1,098	2,452	1,946	97	569
Hardwoods:						
Select white oaks	12,997	1,326	4,039	5,063	1,679	890
Other white oaks	4,473	854	2,340	1,114	165	--
Select red oaks	1,898	145	551	923	279	--
Red oaks	22,529	1,855	7,125	9,234	2,967	1,348
Other red oaks	836	94	243	98	401	--
Hickory A	1,676	91	509	962	114	--
Hickory B	2,827	229	917	930	600	151
Hard maple	180	4	30	99	47	--
Soft maple	80	--	62	18	--	--
Sweetgum	76	--	20	--	56	--
Tupelo and blackgum	443	43	136	187	56	21
Ash	360	20	178	101	14	47
Sycamore	736	11	340	345	40	--
River birch	156	--	126	30	--	--
Black walnut	419	16	126	149	128	--
Black cherry	50	--	15	--	35	--
Elm	522	70	112	201	139	--
Other hardwoods	197	18	96	13	70	--
Total hardwoods	50,455	4,776	16,965	19,467	6,790	2,457
All species	56,617	5,874	19,417	21,413	6,887	3,026

1/ Cuttings of less than 240 cubic feet per acre are excluded.

Table 45.--*Average annual allowable cut by harvest cuttings of growing stock for 1972-1981 on commercial forest land, by species and stand-volume class, Eastern Ozarks, Missouri*

(Thousand cubic feet)

Species	All classes	Stand-volume class[1/] (cubic feet per acre)				
		240-399	400-799	800-1,199	1,200-1,599	1,600+
Softwoods:						
Shortleaf pine	4,434	476	1,828	1,478	83	569
Eastern redcedar	142	54	60	28	--	--
Total softwoods	4,576	530	1,888	1,506	83	569
Hardwoods:						
Select white oaks	11,490	885	3,321	4,844	1,550	890
Other white oaks	4,137	749	2,136	1,101	151	--
Select red oaks	1,741	92	447	923	279	--
Red oaks	17,529	650	4,809	8,081	2,641	1,348
Other red oaks	819	87	233	98	401	--
Hickory A	1,520	66	443	897	114	--
Hickory B	2,588	146	761	930	600	151
Hard maple	174	4	24	99	47	--
Soft maple	50	--	32	18	--	--
Sweetgum	56	--	--	--	56	--
Tupelo and blackgum	406	31	111	187	56	21
Ash	307	20	125	101	14	47
Sycamore	518	11	122	345	40	--
River birch	30	--	--	30	--	--
Black walnut	374	--	97	149	128	--
Black cherry	35	—	--	--	35	--
Elm	424	49	35	201	139	--
Other hardwoods	113	18	12	13	70	--
Total hardwoods	42,311	2,808	12,708	18,017	6,321	2,457
All species	46,887	3,338	14,596	19,523	6,404	3,026

1/ Cuttings of less than 240 cubic feet per acre are excluded.

Table 46.--*Average annual allowable cut by thinnings of growing stock for 1972-1981 on commercial forest land, by species and stand-volume class, Eastern Ozarks, Missouri*

(Thousand cubic feet)

Species	All classes	Stand-volume class[1/] (cubic feet per acre)			
		240-399	400-799	800-1,199	1,200-1,599
Softwoods:					
Shortleaf pine	1,576	568	554	440	14
Eastern redcedar	10	--	10	--	--
Total softwoods	1,586	568	564	440	14
Hardwoods:					
Select white oaks	1,507	441	718	219	129
Other white oaks	336	105	204	13	14
Select red oaks	157	53	104	--	--
Red oaks	5,000	1,205	2,316	1,153	326
Other red oaks	17	7	10	--	--
Hickory A	156	25	66	65	--
Hickory B	239	83	156	--	--
Hard maple	6	--	6	--	--
Soft maple	30	--	30	--	--
Sweetgum	20	--	20	--	--
Tupelo and blackgum	37	12	25	--	--
Ash	53	--	53	--	--
Sycamore	218	--	218	--	--
River birch	126	--	126	--	--
Black walnut	45	16	29	--	--
Black cherry	15	--	15	--	--
Elm	98	21	77	--	--
Other hardwoods	84	--	84	--	--
Total hardwoods	8,144	1,968	4,257	1,450	469
All species	9,730	2,536	4,821	1,890	483

1/ Cuttings of less than 240 cubic feet per acre are excluded.

Table 47.--*Average annual allowable cut of sawtimber[1/] for 1972-1981 from harvest cuttings and thinnings, on commercial forest land, by species and forest type, Eastern Ozarks, Missouri*

(Thousand board feet)[2/]

Species	All forest types	Shortleaf pine	Eastern redcedar	Eastern redcedar-hardwood	Shortleaf pine-oak	Post-blackjack oak	Black-scarlet oak	White oak	Oak-gum-cypress	Elm-ash-cottonwood	Maple-beech
Softwoods:											
Shortleaf pine	23,585	8,333	--	--	7,925	899	4,034	2,012	--	382	--
Eastern redcedar	426	58	234	--	79	--	1	--	--	54	--
Total softwoods	24,011	8,391	234	--	8,004	899	4,035	2,012	--	436	--
Hardwoods:											
Select white oaks	36,173	347	--	22	1,470	1,334	14,133	17,813	46	640	368
Other white oaks	12,724	27	--	188	463	7,386	3,629	971	--	60	--
Select red oaks	7,294	--	--	--	--	--	5,389	1,804	--	101	--
Red oaks	76,344	1,072	--	--	2,286	4,698	57,356	10,261	--	591	80
Other red oaks	3,545	--	--	--	128	787	416	199	2,015	--	--
Hickory A	4,291	--	--	44	265	640	1,548	1,489	106	199	--
Hickory B	7,220	--	--	6	264	1,279	4,080	1,499	--	--	92
Hard maple	518	--	--	--	--	--	157	--	--	--	361
Soft maple	97	--	--	--	--	--	--	--	--	97	--
Sweetgum	174	--	--	--	--	--	114	--	52	8	--
Tupelo and blackgum	1,687	60	--	--	--	77	631	801	--	--	118
Ash	828	--	10	--	--	119	128	131	--	440	--
Sycamore	2,108	--	--	--	--	135	262	--	--	1,188	523
River birch	504	--	--	--	--	--	--	--	--	387	117
Black walnut	854	--	--	--	--	--	309	484	--	--	61
Black cherry	252	--	--	--	--	--	190	28	--	34	--
Elm	1,425	--	--	--	--	--	439	595	--	77	314
Other hardwoods	391	--	--	--	--	--	--	--	--	41	350
Total hardwoods	156,429	1,506	10	260	4,876	16,455	88,781	36,075	2,219	3,863	2,384
All species	180,440	9,897	244	260	12,880	17,354	92,816	38,087	2,219	4,299	2,384

1/ Cuttings of less than 3 cords per acre, or the equivalent in board feet, are included.

2/ International 1/4-inch rule.

Table 48.--*Average annual allowable cut of sawtimber[1] for 1972-1981 from harvest cuttings and thinnings, on commercial forest land, by species and stand-volume class, Eastern Ozarks, Missouri*

(Thousand board feet)[2]

Species	All classes	Stand-volume class (board feet per acre)			
		0-1,499	1,500-2,499	2,500-4,999	5,000-7,499
Softwoods:					
Shortleaf pine	23,585	6,895	5,000	9,641	2,049
Eastern redcedar	426	426	--	--	--
Total softwoods	24,011	7,321	5,000	9,641	2,049
Hardwoods:					
Select white oaks	36,173	7,689	8,295	17,382	2,807
Other white oaks	12,724	4,948	3,692	4,084	--
Select red oaks	7,294	1,682	1,045	4,567	--
Red oaks	76,344	12,347	24,756	31,045	8,196
Other red oaks	3,545	859	566	2,120	--
Hickory A	4,291	745	2,306	1,109	131
Hickory B	7,220	1,778	935	3,181	1,326
Hard maple	518	18	361	139	--
Soft maple	97	97	--	--	--
Sweetgum	174	8	--	166	--
Tupelo and blackgum	1,687	354	221	764	348
Ash	828	152	308	368	--
Sycamore	2,108	842	469	797	--
River birch	504	387	117	--	--
Black walnut	854	213	245	396	--
Black cherry	252	62	--	--	190
Elm	1,425	153	184	933	155
Other hardwoods	391	125	266	--	--
Total hardwoods	156,429	32,459	43,766	67,051	13,153
All species	180,440	39,780	48,766	76,692	15,202

1/ Cuttings of less than 3 cords per acre, or the equivalent in board feet, are included.

2/ International 1/4-inch rule.

Table 49.--*Average annual allowable cut by harvest cuttings of sawtimber[1] for 1972-1981 on commercial forest land, by species and stand-volume class, Eastern Ozarks, Missouri*

(Thousand board feet)[2]

Species	All classes	Stand-volume class (board feet per acre)			
		0-1,499	1,500-2,499	2,500-4,999	5,000-7,499
Softwoods:					
Shortleaf pine	17,966	3,208	4,664	8,045	2,049
Eastern redcedar	371	371	--	--	--
Total softwoods	18,337	3,579	4,664	8,045	2,049
Hardwoods:					
Select white oaks	33,391	6,122	7,580	16,882	2,807
Other white oaks	12,124	4,509	3,531	4,084	--
Select red oaks	6,680	1,130	983	4,567	--
Red oaks	64,370	6,083	19,305	30,786	8,196
Other red oaks	3,499	813	566	2,120	--
Hickory A	3,769	488	2,306	844	131
Hickory B	6,670	1,288	875	3,181	1,326
Hard maple	500	--	361	139	--
Sweetgum	166	--	--	166	--
Tupelo and blackgum	1,534	201	221	764	348
Ash	730	54	308	368	--
Sycamore	1,609	343	469	797	--
River birch	117	--	117	--	--
Black walnut	745	104	245	396	--
Black cherry	190	--	--	--	190
Elm	1,315	43	184	933	155
Other hardwoods	307	41	266	--	--
Total hardwoods	137,716	21,219	37,317	66,027	13,153
All species	156,053	24,798	41,981	74,072	15,202

1/ Cuttings of less than 3 cords per acre, or the equivalent in board feet, are included.

2/ International 1/4-inch rule.

Table 50.--*Average annual allowable cut by thinnings of sawtimber[1] for 1972-1981 on commercial forest land, by species and stand-volume class, Eastern Ozarks, Missouri*

(Thousand board feet)[2]

Species	All classes	Stand-volume class (board feet per acre)		
		0-1,499	1,500-2,499	2,500-4,999
Softwoods:				
Shortleaf pine	5,619	3,687	336	1,596
Eastern redcedar	55	55	--	--
Total softwoods	5,674	3,742	336	1,596
Hardwoods:				
Select white oaks	2,782	1,567	715	500
Other white oaks	600	439	161	--
Select red oaks	614	552	62	--
Red oaks	11,974	6,264	5,451	259
Other red oaks	46	46	--	--
Hickory A	522	257	--	265
Hickory B	550	490	60	--
Hard maple	18	18	--	--
Soft maple	97	97	--	--
Sweetgum	8	8	--	--
Tupelo and blackgum	153	153	--	--
Ash	98	98	--	--
Sycamore	499	499	--	--
River birch	387	387	--	--
Black walnut	109	109	--	--
Black cherry	62	62	--	--
Elm	110	110	--	--
Other hardwoods	84	84	--	--
Total hardwoods	18,713	11,240	6,449	1,024
All species	24,387	14,982	6,785	2,620

1/ Cuttings of less than 3 cords per acre, or the equivalent in board feet, are included.

2/ International 1/4-inch rule.

Table 51.--*Area of allowable cut*[1/] *by harvest cuttings on commercial forest land for 1972-1981, by forest type and stand-age class, Eastern Ozarks, Missouri*

(Thousand acres)

Forest type	All ages	Stand-age class (years)											
		1-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-119	120-139
Shortleaf pine	17.1	--	--	--	--	--	12.4	4.7	--	--	--	--	--
Eastern redcedar	2.1	--	.6	--	--	--	--	--	1.5	--	--	--	--
Eastern redcedar-hardwood	3.6	1.1	--	.8	--	1.7	--	--	--	--	--	--	--
Shortleaf pine-oak	35.3	--	--	--	--	--	8.3	12.7	10.8	--	3.5	--	--
Post-blackjack oak	141.9	--	--	--	--	--	--	22.4	34.6	30.7	7.6	35.1	11.5
Black-scarlet oak	303.2	--	--	--	--	--	--	68.2	135.5	38.2	30.6	30.7	--
White oak	147.4	--	--	--	--	--	--	--	43.7	34.4	38.5	15.4	15.4
Oak-gum-cypress	2.3	--	--	--	--	2.3	--	--	--	--	--	--	--
Elm-ash-cottonwood	15.8	--	--	--	--	--	--	2.9	6.6	6.3	--	--	--
Maple-beech	7.5	--	--	--	--	--	--	--	7.5	--	--	--	--
All forest types	676.2	1.1	.6	.8	--	4.0	20.7	110.9	240.2	109.6	80.2	81.2	26.9

1/ For a 10-year period.

Table 52.--*Area of allowable cut*[1/] *by thinnings on commercial forest land for 1972-1981, by forest type and stand-age class, Eastern Ozarks, Missouri*

(Thousand acres)

Forest type	All ages	Stand-age class (years)						
		0-9	10-19	20-29	30-39	40-49	50-59	60-69
Shortleaf pine	35.4	--	--	3.7	14.9	16.8	--	--
Shortleaf pine-oak	21.6	--	--	--	10.8	10.8	--	--
Black-scarlet oak	413.9	3.8	30.0	15.4	132.8	137.3	94.6	--
White oak	86.1	4.0	3.5	7.9	15.8	27.5	23.5	3.9
Elm-ash-cottonwood	26.2	--	--	10.3	6.6	9.3	--	--
Maple-beech	8.2	--	--	4.5	3.1	--	--	.6
All forest types	591.4	7.8	33.5	41.8	184.0	201.7	118.1	4.5

1/ For a 10-year period.

PRINCIPAL TREE SPECIES IN MISSOURI'S EASTERN OZARKS UNIT[3/]

SOFTWOOD SPECIES

Shortleaf pine . . . . . *Pinus echinata*
Eastern redcedar . . . . . *Juniperus virginiana*

HARD HARDWOOD SPECIES

Ashes:
- White ash . . . . . *Fraxinus americana*
- Green ash . . . . . *Fraxinus pennsylvanica*

Black walnut . . . . . *Juglans nigra*

Hard maples:
- Sugar maple . . . . . *Acer saccharum*

Hickory group A:
- Pecan . . . . . *Carya illinoensis*
- Shellbark hickory . . . . . *Carya laciniosa*
- Shagbark hickory . . . . . *Carya ovata*
- Mockernut hickory . . . . . *Carya tomentosa*

Hickory group B:
- Water hickory . . . . . *Carya aquatica*
- Bitternut hickory . . . . . *Carya cordiformis*
- Pignut hickory . . . . *Carya glabra* var. *glabra*
- Black hickory . . . . . *Carya texana*

River birch . . . . . *Betula nigra*

Select white oaks:
- White oak . . . . . *Quercus alba*
- Bur oak . . . . . *Quercus macrocarpa*
- Swamp chestnut oak . . . . . *Quercus michauxii*
- Chinkapin oak . . . . . *Quercus muehlenbergii*
- Swamp white oak . . . . . *Quercus bicolor*
- Overcup oak . . . . . *Quercus lyrata*

Other white oaks:
- Post oak . . . . . *Quercus stellata* var. *stellata*

Select red oaks:
- Cherrybark oak . *Quercus falcata* var. *pagodaefolia*
- Northern red oak . . . . . *Quercus rubra*
- Shumard oak . . *Quercus shumardii* var. *shumardii*

Red oaks:
- Scarlet oak . . . . . *Quercus coccinea*
- Southern red oak . . *Quercus falcata* var. *falcata*
- Black oak . . . . . *Quercus velutina*

Other red oaks:
- Shingle oak . . . . . *Quercus imbricaria*
- Blackjack oak . . . . . *Quercus marilandica*
- Pin oak . . . . . *Quercus palustris*
- Willow oak . . . . . *Quercus phellos*

Other hard hardwoods:
- Black locust . . . . . *Robinia pseudoacacia*
- Common persimmon . . . . . *Diospyros virginiana*
- Flowering dogwood . . . . . *Cornus florida*
- Honeylocust . . . . . *Gleditsia triacanthos*
- Red mulberry . . . . . *Morus rubra*

SOFT HARDWOOD SPECIES

American basswood . . . . . *Tilia americana*
American sycamore . . . . . *Platanus occidentalis*
Black cherry . . . . . *Prunus serotina*
Butternut . . . . . *Juglans cinerea*

Cottonwoods:
- Eastern cottonwood . . . . . *Populus deltoides*

Elms:
- Winged elm . . . . . *Ulmus alata*
- American elm . . . . . *Ulmus americana*
- Slippery elm . . . . . *Ulmus rubra*
- Rock elm . . . . . *Ulmus thomasii*

Soft maples:
- Red maple . . . . . *Acer rubrum* var. *rubrum*
- Silver maple . . . . . *Acer saccharinum*

Sweetgum . . . . . *Liquidambar styraciflua*

Tupelo and blackgum:
- Blackgum . . . . . *Nyssa sylvatica* var. *biflora*

Other soft hardwoods:
- Black willow . . . . . *Salix nigra*
- Boxelder . . . . . *Acer negundo*
- Hackberry . . . . . *Celtis occidentalis*
- Sassafras . . . . . *Sassafras albidum*

3/ The common and scientific names are based on "Check List of Native and Naturalized Trees of the United States (Including Alaska)," by Elbert L. Little, Jr., U.S. Dep. Agric., Agric. Handb. 41, 472 p., 1953.

APPENDIX

ACCURACY OF SURVEY

Forest Survey information is based on a sampling procedure designed to provide reliable statistics at the State and Survey Unit levels. Consequently, the reported figures are estimates only. However, a measure of reliability of these figures is given by sampling errors. These sampling errors may be interpreted as meaning that the chances are two out of three that if a 100-percent inventory had been taken, using the same methods, the results would have been within the limits indicated.

For example, the estimated area of commercial forest land in the Eastern Ozarks Unit in 1972, 4,084.0 thousand acres, has a sampling error of ±0.8 percent (±32.7 thousand acres). The commercial forest area from a 100-percent inventory, then, would be expected to fall between 4,051.3 and 4,116.7 thousand acres (4,084.0 ± 32.7), there being a one in three chance that this is not the case.

Following are sampling errors for total estimated volume, net growth, and removals for both growing stock and sawtimber, and for area of commercial forest land during the 1972 Eastern Ozarks survey:

Item	*Eastern Ozarks Unit totals*	*Sampling error (Percent)*
Growing stock:		
Volume	28,045.6 M cords	2.2
Growth	903.0 M cords	3.1
Removals	517.7 M cords	6.6
Sawtimber:		
Volume	5,286.5 MM bd. ft.	3.2
Growth	124.0 MM bd. ft.	3.9
Removals	156.4 MM bd. ft.	5.6
Commercial forest land	4,084.0 M acres	.8

As survey data are broken down into units smaller than State or Survey Unit totals, the sampling error increases. The smaller the breakdown, the larger the sampling error. For example, the sampling error for area of commercial forest land in a particular county is higher than that for total commercial forest area in the Survey Unit. An approximation of the increasing sampling error can be obtained from table 53, which shows the sampling errors associated with estimates smaller than totals in the Eastern Ozarks Unit.

SURVEY PROCEDURE

The major steps in the survey of the Eastern Ozarks Unit were as follows:

1. A total of 29,119 1-acre points distributed systematically across aerial photos of the entire area were observed. These points were classified as either forest land (20,853) or nonforest land (8,266) in order to make a preliminary estimate of forest area. Next, 8,069 of the forest points were stereoclassified as to forest type, stand-size class, and density. Then 1,139 points classed as forest and 507 points classed as nonforest were examined on the ground to correct the preliminary area estimate for errors in classification and for actual changes in land use since the photos were taken. Some of the points examined were locations of permanent sample plots (each of which contained one variable-radius plot with basal area factor five) established during the 1959 survey. Of the 1,075 points determined to be on commercial forest land from ground examination, 444 were at previously unsampled locations and 10-point variable-radius plots (basal area factor 37.5) were established uniformly over the sample acre. The remaining 631 points were at formerly established permanent plot locations and were remeasured by superimposing 10-point variable-radius plots (basal area factor 37.5) over the existing plot in addition to remeasuring the basal area factor 5 plot. Tree measurements made on new and remeasured plots were the basis for estimates of timber volume, growth, mortality, number of trees, and other forest classifications.

2. Statistics on timber utilization in 1969 were obtained from mill surveys and from remeasurement of permanent sample plots. The Missouri Department of Conservation conducted a canvass of resident saw-

Table 53.--*Sampling errors*[1/] *for estimates smaller than unit totals of volume, net growth, and removals, and of area of commercial forest land, Eastern Ozarks, Missouri, 1972*

Sampling error (percent)	Commercial forest	Growing stock			Sawtimber		
		Inventory	Growth	Removals	Inventory	Growth	Removals
	Thousand acres	Thousand cords			Million board feet		
1	3,329.7						
2	832.4	39,377.3					
3	370.0	17,501.3	1,081.1		7,096.8	243.2	
4	208.1	9,844.5	608.1		3,991.9	136.8	
5	133.2	6,301.7	389.2	898.7	2,554.8	87.5	194.1
10	33.3	1,575.1	97.3	225.3	638.7	21.9	48.5
15	14.8	700.0	43.2	100.0	283.9	9.7	21.6
20	8.3	393.8	24.3	55.7	159.7	5.5	12.1
25	5.3	252.0	15.6	35.4	102.2	3.5	7.8
50	1.3	63.0	3.9	8.9	25.5	.9	1.9
100	.3	15.7	1.0	2.5	6.4	.2	.5

1/ At the 68-percent probability level.

mills, veneer mills, and other primary wood-using plants. The North Central Forest Experiment Station canvassed resident pulpmills, and the underground mining industry in Missouri, as well as out-of-State sawmills, pulpmills, and veneer mills to determine their use of timber from Missouri. Fuelwood and fencepost output was based on U.S. Census of Agriculture and Housing figures, a canvass of public and industrial timber owners, and a canvass of resident wood-treating plants. Estimates of primary mill residue used for fuelwood were obtained from the canvass of Missouri primary wood-using plants. Timber cut for products by owner class was determined by a canvass of all public and industrial timber owners. The portion of timber cut unaccounted for by the latter owners was grouped under "farmer and other owners."

3. To develop wood utilization factors used in converting timber products output to timber removals for saw logs, veneer logs, cooperage logs, pulpwood, and charcoal wood, 486 felled trees throughout the State were measured. Factors for all other products were obtained during the 1959-1960 Missouri utilization study.

4. Field data were sent to St. Paul where they were edited, punched on cards, and stored on magnetic tape for later machine sorting, computing, and tabulation.

ALLOWABLE CUT

Allowable cut is the estimated volume of timber on commercial forest land that could be cut annually for the next 10 years, while improving tree stocking and bringing about a more even distribution of age classes. In Missouri, annual allowable cut is shown separately as that from harvest cutting and from thinnings, and was determined by computer using an area control system for determining the number of acres to be cut annually.

The harvest cut of sawtimber was calculated from stands of forest types normally managed for sawtimber whose site index and age indicated they were ready for harvest, or would be within the next 10 years. Table 54 shows the site index used in these calculations for each forest type to determine whether the objective of management would be to grow sawtimber or pulpwood. Included also is the rotation age for each.

Stands that did not qualify for harvest during that period were checked to see if they were overstocked by basal area standards, or would be within the next 10 years. Stands determined to be overstocked were "thinned" by the computer back to their recommended basal area stocking level, and the volume of sawtimber trees "thinned" was added to the volume of allowable cut by thinnings of sawtimber. The volume of poletimber trees "thinned" was added to the growing-stock allowable cut by thinnings. In scheduling thinnings, the computer program first "removes" rough and rotten trees, then short-log trees, and finally, growing-stock trees.

Table 54.--*Forest type, site index, and rotation age, by management objective, used in calculation of annual allowable cut, Missouri, 1972*

Forest type	Site index	Rotation age	Management objective
		Years	
Shortleaf pine	50 or higher	60	Sawtimber
	Less than 50	40	Pulpwood
Shortleaf pine-oak	60 or higher	80	Sawtimber
	Less than 60	50	Pulpwood
Eastern redcedar	35 or higher	55	Sawtimber
	Less than 35	70	Sawtimber
Eastern redcedar-hardwood	45 or higher	50	Sawtimber
	Less than 45	60	Sawtimber
Black-scarlet oak	60 or higher	80	Sawtimber
	Less than 60	50	Pulpwood
White oak	60 or higher	80	Sawtimber
	Less than 60	50	Pulpwood
Post-blackjack oak	All sites	50	Pulpwood
Oak-gum-cypress	All sites	60	Sawtimber
Cottonwood	All sites	30	Sawtimber
Elm-ash-cottonwood	All sites	50	Sawtimber
Maple-beech	All sites	90	Sawtimber

The harvest cut of growing stock included that of sawtimber in addition to the volume from stands of forest types normally managed for pulpwood that were or would be rotation age within the next 10 years.

Allowable cut is based on the assumptions that all timber will be available and accessible when needed, and that a ready market will exist for every species, size, and grade of material harvested. Further, it assumes that the proper sequence of cutting is known and will be followed, and that logging practices employed will result in an improved forest. Because there is no way of guaranteeing that these assumptions will be carried out during the next 10 years, the allowable cut estimates should be compared with timber removals figures only in a general way.

LOG GRADE

In the Eastern Ozarks Unit, the butt log of each sawtimber tree (2,201 trees) on every permanent sample plot was log-graded. Additionally, all of the logs in a smaller sample of trees harvested throughout the State (265 trees) were log-graded. The volume yield by log grade for each tree in the latter sample was used to distribute the volume of trees in the former sample into log grade classes. The resulting volumes by log grade classes were expanded to provide an estimate for the entire Unit.

Logs are graded on the basis of external characteristics as indicators of quality. Hardwood species were graded according to "Hardwood Log Grades for Standard Lumber and How to Use Them," published by the Forest Products Laboratory under the designation D1737A, 1961, and USDA Forest Service standards for hardwood tie and timber logs. The best 12-foot section of the lowest 16-foot hardwood log, or the best 12-foot upper section if the butt log did not meet minimum log-grade standards, was graded.

Shortleaf pine was graded according to "Interim Southern Pine Log Grades," USDA Forest Service, 1953. All other softwoods were graded according to "Specifications for Log Grades of Hardwoods and Softwoods," Northern Hemlock and Hardwood Association, 1947. The lowest 16-foot log in softwood trees or a shorter log to a minimum of 12 feet if a 16-foot butt log was not present, was graded.

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Some Recent Forest Survey Reports Published by
the North Central Forest Experiment Station

Primary forest products industry and industrial roundwood production, Michigan, 1969, by James E. Blyth and Allen H. Boelter. USDA For. Serv. Resour. Bull. NC-12, 12 p., illus. 1971.

Kansas saw-log production jumps 38 percent from 1964 to 1969, by James E. Blyth and Leonard K. Gould. USDA For. Serv. Res. Note NC-128, 2 p., illus. 1971.

Wisconsin's 1968 timber resource--a perspective, by John S. Spencer, Jr. and Harry W. Thorne. USDA For. Serv. Resour. Bull. NC-15, 80 p., illus. 1972.

Missouri's primary forest products output and industries, 1969, by James E. Blyth and Robert Massengale. USDA For. Serv. Resour. Bull. NC-16, 15 p., illus. 1972.

Forest area in Wisconsin counties, 1968, by Burton L. Essex. USDA For. Serv. Res. Note NC-135, 4 p., illus. 1972.

Iowa saw-log production and sawmill industry, 1969, by James E. Blyth and William A. Farris. USDA For. Serv. Res. Note NC-136, 4 p., illus. 1972.

Timber volume in Wisconsin counties, by Arnold J. Ostrom. USDA For. Serv. Res. Note NC-145, 4 p., illus. 1972.

Pulpwood production in the North Central Region by county, 1971, by James E. Blyth. USDA For. Serv. Resour. Bull. NC-17, 21 p., illus. 1973.

Pulpwood production in the North Central Region by county, 1972, by James E. Blyth. USDA For. Serv. Resour. Bull. NC-18, 16 p., illus. 1973.

Lake States pulpwood production dips to 4 million cords in 1971, by James E. Blyth. USDA For. Serv. Res. Note NC-148, 3 p. 1973.

Local net timber volume equations for Wisconsin, by Jerold T. Hahn. USDA For. Serv. Res. Note NC-149, 4 p., illus. 1973.

Pulpwood production in the Lake States by county, 1972, by James E. Blyth. USDA For. Serv. Res. Note NC-152, 4 p. 1973.

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94

INDIANA SAW LOG PRODUCTION & SAWMILL INDUSTRY, 1971

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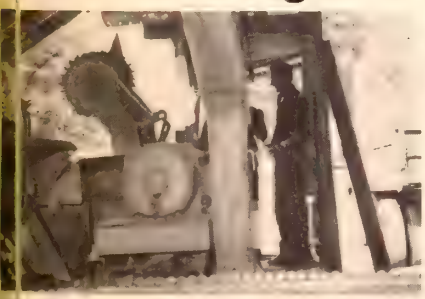

NORTH CENTRAL FOREST EXPERIMENT STATION
FOREST SERVICE
U.S. DEPARTMENT OF AGRICULTURE

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INDIANA SAW LOG PRODUCTION AND SAWMILL INDUSTRY, 1971

James E. Blyth and Donald H. McGuire

SAW LOG PRODUCTION

In 1971, saw log production in Indiana reached 235 million board feet; up 5 percent from the 1966 total. All but 5 million board feet were processed in Indiana (table 1). Out-of-State log shipments went primarily to Kentucky; small quantities were shipped to Ohio and Illinois.

Major species harvested were red oak (including black oak), white oak, yellow-poplar, hard maple, and soft maple.[1/] Compared with 1966, output of red oak saw logs increased 12.5 million board feet and of hickory 6.8 million board feet, while

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1/ Common and scientific names of all species mentioned in this report are listed on page 23.

Table 1.--*Saw log production by species and State of destination, Indiana, 1971*

(In thousand board feet)[1/]

SPECIES	TOTAL PRODUCTION	PRODUCTION SHIPPED TO			
		INDIANA	ILLINOIS	KENTUCKY	OHIO
SOFTWOODS:					
SHORTLEAF PINE	18	18	--	--	--
VIRGINIA PINE	130	130	--	--	--
OTHER PINE	23	23	--	--	--
TOTAL SOFTWOODS	171	171	--	--	--
HARDWOODS:					
WHITE OAK	20,896	20,227	--	477	192
RED OAK	49,475	47,247	--	1,950	278
BLACK OAK	27,393	27,380	--	13	--
PECAN HICKORY	702	683	--	--	19
OTHER HICKORY	13,509	13,509	--	--	--
HARD MAPLE	17,824	17,787	--	1	36
SOFT MAPLE	16,557	16,221	5	295	36
BEECH	9,097	9,096	--	1	--
SWEETGUM	4,566	4,274	--	292	--
BLACKGUM	1,279	987	--	292	--
ASH	13,822	13,705	7	4	106
COTTONWOOD	13,495	13,165	7	292	31
BASSWOOD	3,366	3,361	--	--	5
ASPEN	89	89	--	--	--
YELLOW-POPLAR	19,972	19,695	103	169	5
BLACK WALNUT	5,825	4,987	26	812	--
BLACK CHERRY	1,618	1,613	5	--	--
ELM	1,493	1,361	--	130	2
SYCAMORE	12,612	12,470	--	130	12
OTHER HARDWOODS	1,621	1,621	--	--	--
TOTAL HARDWOODS	235,211	229,478	153	4,858	722
ALL SPECIES	235,382	229,649	153	4,858	722

1/ INTERNATIONAL 1/4-INCH RULE.

at of black walnut fell 4.3 million ard feet and of white oak 4.2 million ard feet.

Much of the increased output of both d oak and hickory saw logs probably uld be attributed to the excellent mar- ts that held up throughout 1971 for both llets and railroad ties. Sawmills were ing all available hardwood species to et the strong demand for pallets.

SAW LOG RECEIPTS

Indiana sawmills received 252 million ard feet of logs in 1971 (up 20 million om 1966), nearly 32 percent of which was d and black oak (table 2). Imports from her States totaled 22.2 million board et, more than 80 percent of which was om Michigan (7.8 million board feet), linois (6.4 million board feet), and io (4 million board feet).

In the Lower Wabash Unit,[2/] procurement of saw logs rose 59 percent from the 1966 level. Much of this increase could probably be attributed to greater log availability during land clearing for the following projects: (1) construction of navigation dams on the Ohio River; (2) levee construction on the Wabash River; (3) construction of a power plant and a large water cooling lake created for the plant; and (4) stream and ditch clearings under Public Law 566.

In the Knobs Unit, saw log receipts in 1971 were 27 percent greater than in 1966. This increase probably could be attributed to expansion of existing mills

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2/ Area Unit used by Forest Survey to make periodic inventories of the Nation's forest resources. See figure 1 for what counties are encompassed in each of the four Forest Survey Units in Indiana.

Table 2.--*Saw log receipts by species and State of origin, Indiana, 1971*

(In thousand board feet)[1/]

SPECIES	TOTAL RECEIPTS	RECEIPTS FROM							
		INDIANA	MICHIGAN	ILLINOIS	KENTUCKY	OHIO	IOWA	MISSOURI	OTHER
SOFTWOODS:									
SHORTLEAF PINE	18	18	--	--	--	--	--	--	--
VIRGINIA PINE	130	130	--	--	--	--	--	--	--
OTHER PINE	23	23	--	--	--	--	--	--	--
TOTAL SOFTWOODS	171	171	--	--	--	--	--	--	--
HARDWOODS:									
WHITE OAK	22,196	20,227	765	549	338	273	--	--	44
RED OAK	50,501	47,247	1,627	806	215	606	--	--	--
BLACK OAK	29,581	27,380	1,219	431	344	207	--	--	--
PECAN HICKORY	705	683	--	22	--	--	--	--	--
OTHER HICKORY	14,324	13,509	256	318	150	91	--	--	--
HARD MAPLE	19,890	17,787	1,352	195	45	511	--	--	--
SOFT MAPLE	17,838	16,221	532	638	77	370	--	--	--
BEECH	9,652	9,096	385	73	43	55	--	--	--
SWEETGUM	4,393	4,274	--	58	60	1	--	--	--
BLACKGUM	1,013	987	--	8	18	--	--	--	--
ASH	14,683	13,705	459	317	101	101	--	--	--
COTTONWOOD	13,774	13,165	129	430	15	35	--	--	--
BASSWOOD	3,939	3,361	357	44	5	172	--	--	--
ASPEN	89	89	--	--	--	--	--	--	--
YELLOW-POPLAR	20,667	19,695	212	274	436	50	--	--	--
BLACK WALNUT	10,526	4,987	320	1,737	488	1,496	407	885	206
BLACK CHERRY	1,806	1,613	100	31	21	20	--	--	21
ELM	1,416	1,361	3	49	2	1	--	--	--
SYCAMORE	12,990	12,470	44	371	56	49	--	--	--
OTHER HARDWOODS	1,690	1,621	32	30	6	1	--	--	--
TOTAL HARDWOODS	251,673	229,478	7,792	6,381	2,420	4,039	407	885	271
ALL SPECIES	251,844	229,649	7,792	6,381	2,420	4,039	407	885	271

1/ INTERNATIONAL 1/4-INCH RULE.

and erection of a few large mills in this Unit during the period 1966-1971.

Log procurement fell in the Northern Unit (19 percent) and in the Upland Flats Unit (6 percent). In the Northern Unit, the availability of logs apparently was adversely affected by such activities as the continued clearing of forest land for crop production, urban development, utility rights-of-way, and highway expansion.

In 1971, the Knobs Unit had replaced the Northern Unit as No. 1 among the four Survey Units in log volume received. Sawmills in the Knobs Unit received 37 percent of the saw log receipts in the State, which included 49 percent of the yellow-poplar receipts (table 3). In the Northern Unit, sawmills acquired 35 percent of the total receipts, which included 52 percent of the hard maple receipts and 63 percent of th walnut receipts.

SAWMILL LOCATION AND SIZE

Eight of 17 counties in which sawmills produced 5 million or more board feet of lumber in 1971 were in the Knobs Unit (fig. 1). Lumber production is negligible in the northwestern counties of the Northern Unit, which are heavily industrialized.

Of the 385 mills active in 1971, 166 were in the Knobs Unit, 127 in the Northern Unit, 52 in the Lower Wabash Unit, and 40 in the Upland Flats Unit. Althoug the majority of mills are concentrated ir the southern third of the State, a significant number of large mills are in the north.

Table 3.--*Saw log receipts in Indiana by species and Survey Units, 1971*

(In thousand board feet)[1/]

SPECIES	STATE TOTAL	LOWER WABASH UNIT	KNOBS UNIT	UPLAND FLATS UNIT	NORTHERN UNIT
SOFTWOODS:					
SHORTLEAF PINE	18	--	18	--	--
VIRGINIA PINE	130	--	130	--	--
OTHER PINE	23	--	--	23	--
TOTAL SOFTWOODS	171	--	148	23	--
HARDWOODS:					
WHITE OAK	22,196	3,853	8,470	1,102	8,771
RED OAK	50,501	12,083	22,126	2,033	14,259
BLACK OAK	29,581	5,793	12,050	1,354	10,384
PECAN HICKORY	705	366	170	10	159
OTHER HICKORY	14,324	2,642	6,876	722	4,084
HARD MAPLE	19,890	2,454	6,389	685	10,362
SOFT MAPLE	17,838	6,642	5,191	302	5,703
BEECH	9,652	1,357	3,638	840	3,817
SWEETGUM	4,393	1,315	2,223	550	305
BLACKGUM	1,013	204	685	103	21
ASH	14,683	3,264	4,871	504	6,044
COTTONWOOD	13,774	5,067	3,487	167	5,053
BASSWOOD	3,939	448	438	105	2,948
ASPEN	89	--	27	62	--
YELLOW-POPLAR	20,667	5,833	10,084	1,297	3,453
BLACK WALNUT	10,526	616	794	2,432	6,684
BLACK CHERRY	1,806	458	533	113	702
ELM	1,416	362	500	76	478
SYCAMORE	12,990	4,030	4,512	776	3,672
OTHER HARDWOODS	1,690	205	598	222	665
TOTAL HARDWOODS	251,673	56,992	93,662	13,455	87,564
ALL SPECIES	251,844	56,992	93,810	13,478	87,564

1/ INTERNATIONAL 1/4-INCH RULE.

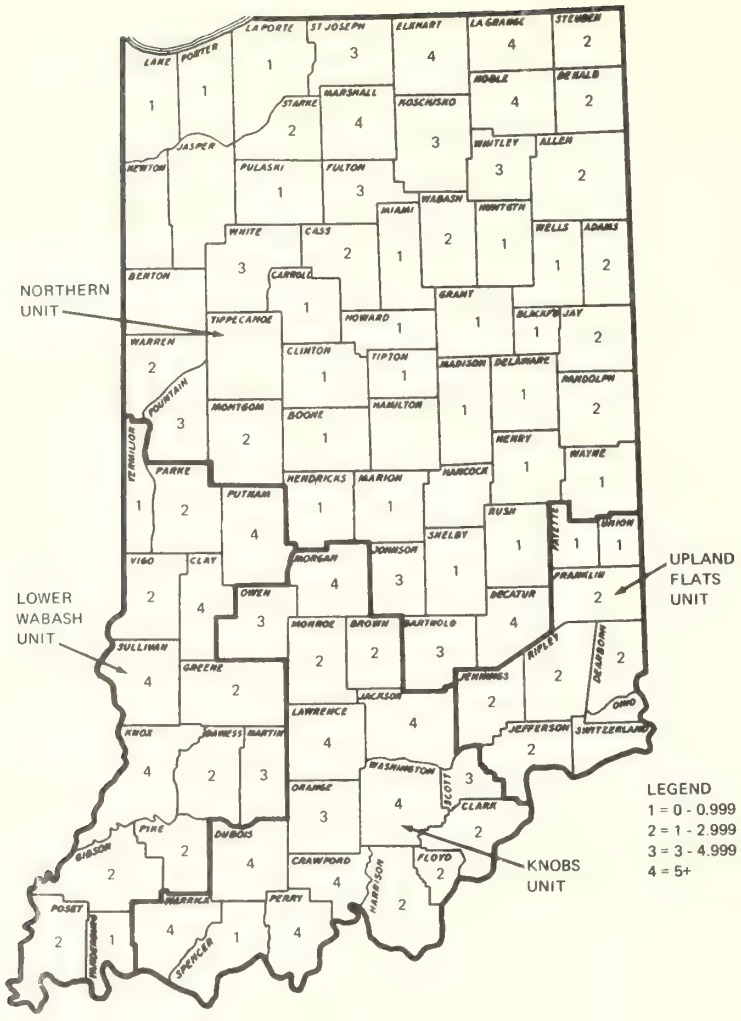

Figure 1.--Lumber production (in million board feet) in four Forest Survey Units in Indiana by county, 1971.

In figure 2, these mills are shown by unty in three lumber production size-classes: all, less than 0.5 million board feet; dium, 0.5 to 0.999 million board feet; d large, 1.0 or more million board feet. e number of mills by Unit follows:

Unit	Small	Medium	Large
ower Wabash	28	7	17
nobs	118	14	34
pland Flats	33	5	2
orthern	77	26	24
Total	256	52	77

Ninety-five fewer mills operated in 1971 than in 1966. Most of the mills that had closed were small mills in the Knobs Unit, cutting less than 500,000 board feet annually. Small mill closures are a continuation of the long-term trend toward larger average mill size. Larger mills usually have proven to be more efficient in reducing unit production costs.

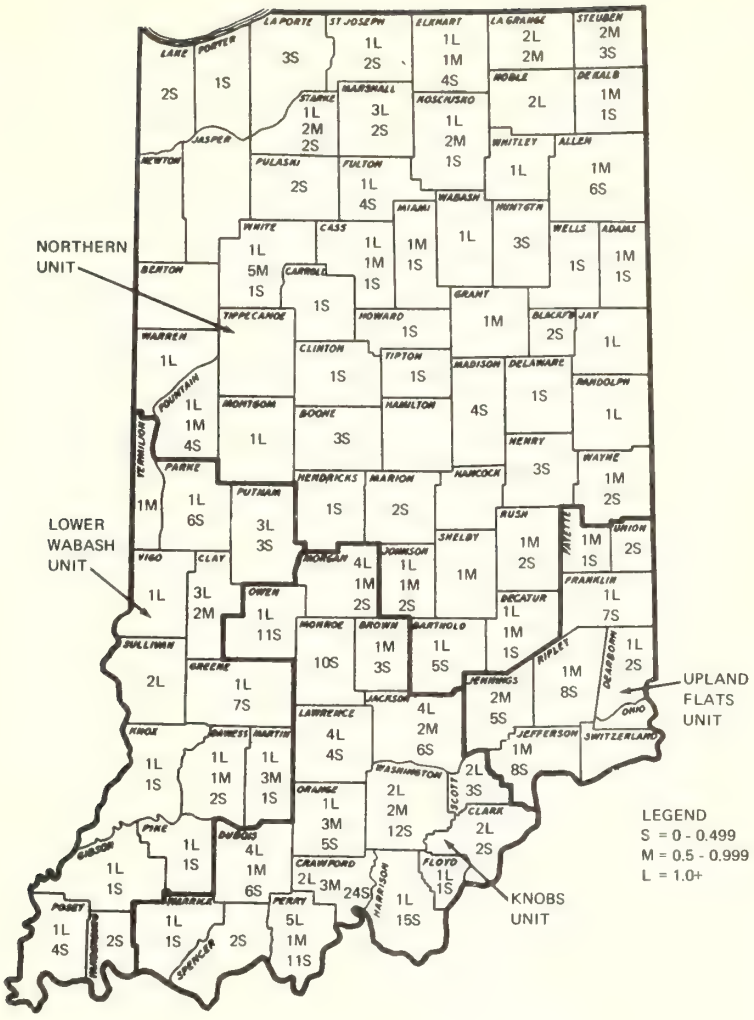

Figure 2.--Number of sawmills in Indiana operating in 1971, by county and by production size-class (million board feet).

SAWMILL RESIDUE[3/]

Sawmill residues are of three types: bark, coarse residue (slabs and edgings and chips from slabs and edgings), and fine residue (sawdust and shavings). The quantity and disposition of these coarse and fine residues generated in Indiana in 1971 are shown below in cords as well as in table 4 in thousand cubic feet.

Type of Use	Coarse *(Thousand cords)*	Fine *(Thousand cords)*
Fiber products	52.0	--
Charcoal	.6	--
Industrial fuel	7.6	7.8
Domestic fuel	15.1	1.6
Other uses	2.5	33.8
Not used	34.0	34.6
Total	111.8	77.8

3/ Includes wood residue and bark from all sawmills producing 500,000 board feet or more of lumber and from 50 smaller mills.

Forty-seven percent (52,000 cords) of the coarse (chippable) residue generated at Indiana sawmills in 1971 was used for pulp, but another 30 percent (34,000 cords) was disposed of as waste (table 4). The remaining 23 percent was used primarily as fuel. By 1971, most of the larger stationary mills had installed chippers and debarkers and others had plans to do so.

The largest concentration of unused coarse residue was produced by mills in south-central Indiana. This probably can be attributed to the large number of portable mills in the area that did not have debarkers or chippers. In one group of six contiguous counties in south-central Indiana, sawmills in each generated a total of 1,250 cords or more of unused coarse residue in 1971. This group includes Crawford, Jackson, Lawrence, Martin, Orange, and Perry Counties. Together these counties produced a total of 1,700 cords of unused chippable residue.

Twelve percent of the fine residue was used for fuel and 43 percent for miscellaneous purposes, such as mulch, animal bedding, poultry litter, and soil conditioners and stabilizers. The remaining 45 pereent was disposed of as waste.

Twenty-three percent of the bark was used for fuel and 7 percent for miscellaneous purposes, such as mulch. Less than 1 percent went to pulpmills; the remaining 69 percent was not used. Bark used for fuel is often incidental to the primary fuel source, namely wood fiber in slabs and edgings.

Unused fine residue supplies were concentrated in two groups of contiguous counties. Sawmills in each of these counties produced a total of over 1,250 cords (100,000 cubic feet) of fine residues that were not used. One group is in south-central Indiana--Crawford, Jackson, Perry, Scott, and Washington Counties. Together, sawmills in these five counties accounted for a total of 765,000 cubic feet. The second group is in southwest Indiana--Clay, Knox, and Sullivan Counties. Together, sawmills in these three counties accounted for a total of 695,000 cubic feet of fine residue, of which 409,000 cubic feet was produced in Sullivan County alone.

Unused bark residue was concentrated in two groups of counties that were more widespread and overlapped the aforementioned groups. One included eight counties; sawmills in each produced 100,000 cubic feet or more of unused bark in 1971. This group is comprised of Crawford, Du-Bois, Jackson, Lawrence, Martin, Perry, Scott, and Washington Counties. Together, sawmills in these counties accounted for a total of 1,475,000 cubic feet of unused bark. The other group is comprised of four counties--Clay, Knox, Putman, and Sullivan. Together, sawmills in these four counties accounted for 1,032,000 cubic feet of unused bark.

SUMMARY AND OUTLOOK

Lumber production probably has increased significantly above the 173 million board feet sawn in 1971.[4/] Pallet markets are exceptionally strong, giving Indiana forest landowners a chance to market most hardwood species including low-quality trees. In view of the resurgence of rail transportation, tie markets should remain good.

Since 1971, in south-central Indiana a noticeable trend has occurred in which portable operators are converting to stationary mills because large timber tracts required to justify good portable operations are becoming scarce, and chip markets are improving. In addition, lumber production in this area has undoubtedly increased, which has been accompanied by an increase in coarse residue. Pulpmills and particleboard plants desiring Indiana coarse sawmill residue should investigate opportunities in this area, particularly the six contiguous counties of Crawford, Jackson, Lawrence, Martin, Orange, and Perry.

Mills in southwest and south-central counties appear to offer the best opportunities to companies needing large quantities of sawdust or bark. As a result of the energy crisis, some firms may wish to consider burning bark and sawdust as a supplement or substitute for natural gas, propane, or fuel oil. Sawmill owners may find the crisis to be an opportunity to market bark and sawdust as fuels and thus lower their residue disposal costs.

4/ Source: U.S. Dep. Comm. Bur. Census, Lumber production and mill stocks, 1971. Curr. Ind. Rep. MA-24T (71)-1.

Table 4.--*Volume of residue[1/] produced at Indiana sawmills by kind of material, type of use, and county and Unit, 1971*

LOWER WABASH UNIT

TYPE OF USE BY COUNTY OR UNIT	WOOD RESIDUE						BARK	
	TOTAL		COARSE		FINE			
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
	THOUSAND CUBIC FEET							
CLAY								
FIBER PRODUCTS 2/	0	101.0	0	101.0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	16.9	0	16.9	0	0	0	13.3
MISCELLANEOUS 3/	0	48.9	0	0	0	48.9	0	4.0
NOT USED 4/	0	230.5	0	116.9	0	113.6	0	169.2
TOTAL	0	397.3	0	234.8	0	162.5	0	186.5
DAVIESS								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	11.5	0	11.5	0	0	0	9.2
MISCELLANEOUS 3/	0	47.9	0	0	0	47.9	0	0
NOT USED 4/	0	67.0	0	63.2	0	3.8	0	50.3
TOTAL	0	126.4	0	74.7	0	51.7	0	59.5
GIBSON								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	4.7	0	4.7	0	0	0	3.8
MISCELLANEOUS 3/	0	52.3	0	0	0	52.3	0	0
NOT USED 4/	0	102.8	0	89.7	0	13.1	0	71.3
TOTAL	0	159.8	0	94.4	0	65.4	0	75.1
GREENE								
FIBER PRODUCTS 2/	0	103.5	0	103.5	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	.8	0	.8	0	0	0	.6
MISCELLANEOUS 3/	0	69.5	0	0	0	69.5	0	79.8
NOT USED 4/	0	2.7	0	0	0	2.7	0	2.5
TOTAL	0	176.5	0	104.3	0	72.2	0	82.9
KNOX								
FIBER PRODUCTS 2/	0	271.9	0	271.9	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	0	0	0	0	0	0	0
MISCELLANEOUS 3/	0	19.2	0	0	0	19.2	0	4.4
NOT USED 4/	0	178.4	0	5.5	0	172.9	0	216.2
TOTAL	0	469.5	0	277.4	0	192.1	0	220.6

TABLE 4 CONTINUED — LOWER WABASH UNIT

TYPE OF USE BY COUNTY OR UNIT	WOOD RESIDUE							
	TOTAL		COARSE		FINE		BARK	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
	THOUSAND CUBIC FEET							
MARTIN								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	22.5	0	22.5	0	0	0	17.8
MISCELLANEOUS 3/	0	23.5	0	0	0	23.5	0	0
NOT USED 4/	0	284.1	0	172.6	0	111.5	0	137.2
TOTAL	0	330.1	0	195.1	0	135.0	0	155.0
PARKE								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	53.0	0	53.0	0	0	0	42.2
MISCELLANEOUS 3/	0	0	0	0	0	0	0	0
NOT USED 4/	0	36.7	0	0	0	36.7	0	0
TOTAL	0	89.7	0	53.0	0	36.7	0	42.2
PIKE								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	.7	0	.7	0	0	0	.6
MISCELLANEOUS 3/	0	38.0	0	0	0	38.0	0	0
NOT USED 4/	0	85.2	0	72.5	0	12.7	0	57.6
TOTAL	0	123.9	0	73.2	0	50.7	0	58.2
POSEY								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	7.2	0	7.2	0	0	0	5.7
MISCELLANEOUS 3/	0	5.0	0	0	0	5.0	0	0
NOT USED 4/	0	96.5	0	57.0	0	39.5	0	45.3
TOTAL	0	108.7	0	64.2	0	44.5	0	51.0
PUTNAM								
FIBER PRODUCTS 2/	0	263.0	0	263.0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	6.4	0	6.4	0	0	0	1.0
MISCELLANEOUS 3/	0	145.8	0	0	0	145.8	0	32.8
NOT USED 4/	0	59.0	0	10.8	0	48.2	0	189.0
TOTAL	0	474.2	0	280.2	0	194.0	0	222.8

TABLE CONTINUED ON NEXT PAGE

TABLE 4 CONTINUED — LOWER WABASH UNIT

TYPE OF USE BY COUNTY OR UNIT	WOOD RESIDUE							
	TOTAL		COARSE		FINE		BARK	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
	THOUSAND CUBIC FEET							
SULLIVAN								
FIBER PRODUCTS 2/	0	586.0	0	586.0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	19.6	0	19.6	0	0	0	0
MISCELLANEOUS 3/	0	10.2	0	0	0	10.2	0	23.7
NOT USED 4/	0	409.1	0	0	0	409.1	0	457.7
TOTAL	0	1024.9	0	605.6	0	419.3	0	481.4
VERMILLION								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	3.7	0	3.7	0	0	0	2.9
MISCELLANEOUS 3/	0	0	0	0	0	0	0	0
NOT USED 4/	0	58.6	0	33.1	0	25.5	0	26.3
TOTAL	0	62.3	0	36.8	0	25.5	0	29.2
VIGO								
FIBER PRODUCTS 2/	0	60.5	0	60.5	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	0	0	0	0	0	0	0
MISCELLANEOUS 3/	0	37.7	0	0	0	37.7	0	2.4
NOT USED 4/	0	4.2	0	0	0	4.2	0	45.7
TOTAL	0	102.4	0	60.5	0	41.9	0	48.1
ALL COUNTIES LOWER WABASH UNIT								
FIBER PRODUCTS 2/	0	1385.9	0	1385.9	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	147.0	0	147.0	0	0	0	97.1
MISCELLANEOUS 3/	0	498.0	0	0	0	498.0	0	147.1
NOT USED 4/	0	1614.8	0	621.3	0	993.5	0	1468.3
TOTAL	0	3645.7	0	2154.2	0	1491.5	0	1712.5
KNOBS UNIT								
BROWN								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	39.5	0	39.5	0	0	0	31.4
MISCELLANEOUS 3/	0	21.7	0	0	0	21.7	0	0
NOT USED 4/	0	5.7	0	0	0	5.7	0	0
TOTAL	0	66.9	0	39.5	0	27.4	0	31.4

TABLE CONTINUED ON NEXT PAGE

TABLE 4 CONTINUED — KNOBS UNIT

TYPE OF USE BY COUNTY OR UNIT	WOOD RESIDUE						BARK	
	TOTAL		COARSE		FINE			
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
	THOUSAND CUBIC FEET							
CLARK								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	71.1	0	42.0	0	29.1	0	33.4
DOMESTIC FUEL	0	15.6	0	15.6	0	0	0	12.4
MISCELLANEOUS 3/	0	45.9	0	0	0	45.9	0	0
NOT USED 4/	0	57.3	0	54.6	0	2.7	0	43.4
TOTAL	0	189.9	0	112.2	0	77.7	0	89.2
CRAWFORD								
FIBER PRODUCTS 2/	0	95.9	0	95.9	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	8.0	0	8.0	0	0	0	6.4
MISCELLANEOUS 3/	0	49.8	0	0	0	49.8	0	0
NOT USED 4/	0	227.3	0	121.3	0	106.0	0	172.6
TOTAL	0	381.0	0	225.2	0	155.8	0	179.0
DUBOIS								
FIBER PRODUCTS 2/	0	46.8	0	46.8	0	0	0	0
CHARCOAL	0	46.8	0	46.8	0	0	0	0
INDUSTRIAL FUEL	0	1.7	0	1.7	0	0	0	1.3
DOMESTIC FUEL	0	114.5	0	114.5	0	0	0	86.4
MISCELLANEOUS 3/	0	122.7	0	0	0	122.7	0	0
NOT USED 4/	0	162.7	0	82.8	0	79.9	0	144.8
TOTAL	0	495.2	0	292.6	0	202.6	0	232.5
FLOYD								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	23.2	0	0	0	23.2	0	0
MISCELLANEOUS 3/	0	86.3	0	86.3	0	0	0	0
NOT USED 4/	0	52.8	0	9.6	0	43.2	0	76.3
TOTAL	0	162.3	0	95.9	0	66.4	0	76.3
HARRISON								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	95.9	0	56.7	0	39.2	0	45.0
DOMESTIC FUEL	0	0	0	0	0	0	0	0
MISCELLANEOUS 3/	0	0	0	0	0	0	0	0
NOT USED 4/	0	2.7	0	1.6	0	1.1	0	1.3
TOTAL	0	98.6	0	58.3	0	40.3	0	46.3

TABLE CONTINUED ON NEXT PAGE

TABLE 4 CONTINUED — KNOBS UNIT

TYPE OF USE BY COUNTY OR UNIT	WOOD RESIDUE							
	TOTAL		COARSE		FINE		BARK	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
	THOUSAND CUBIC FEET							
JACKSON								
FIBER PRODUCTS 2/	0	75.9	0	75.9	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	2.8	0	2.8	0	0	0	2.3
MISCELLANEOUS 3/	0	38.3	0	0	0	38.3	0	0
NOT USED 4/	0	450.1	0	256.3	0	193.8	0	264.0
TOTAL	0	567.1	0	335.0	0	232.1	0	266.3
LAWRENCE								
FIBER PRODUCTS 2/	0	82.2	0	82.2	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	4.9	0	4.9	0	0	0	1.7
MISCELLANEOUS 3/	0	72.1	0	0	0	72.1	0	0
NOT USED 4/	0	190.2	0	102.2	0	88.0	0	182.2
TOTAL	0	349.4	0	189.3	0	160.1	0	183.9
MONROE								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	1.1	0	1.1	0	0	0	0
MISCELLANEOUS 3/	0	2.4	0	0	0	2.4	0	0
NOT USED 4/	0	2.5	0	2.5	0	0	0	2.8
TOTAL	0	6.0	0	3.6	0	2.4	0	2.8
MORGAN								
FIBER PRODUCTS 2/	0	170.5	0	170.5	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	114.2	0	114.2	0	0	0	90.9
MISCELLANEOUS 3/	0	154.4	0	0	0	154.4	0	89.2
NOT USED 4/	0	145.1	0	60.4	0	84.7	0	94.4
TOTAL	0	584.2	0	345.1	0	239.1	0	274.5
ORANGE								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	48.8	0	28.8	0	20.0	0	22.9
DOMESTIC FUEL	0	26.6	0	24.0	0	2.6	0	19.1
MISCELLANEOUS 3/	0	33.9	0	0	0	33.9	0	0
NOT USED 4/	0	163.2	0	108.2	0	55.0	0	86.0
TOTAL	0	272.5	0	161.0	0	111.5	0	128.0

TABLE CONTINUED ON NEXT PAGE

TYPE OF USE BY COUNTY OR UNIT	WOOD RESIDUE							
	TOTAL		COARSE		FINE		BARK	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
	THOUSAND CUBIC FEET							
OWEN								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	45.6	0	45.6	0	0	0	36.2
MISCELLANEOUS 3/	0	47.3	0	0	0	47.3	0	0
NOT USED 4/	0	35.7	0	30.4	0	5.3	0	24.2
TOTAL	0	128.6	0	76.0	0	52.6	0	60.4
PERRY								
FIBER PRODUCTS 2/	0	223.4	0	223.4	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	9.9	0	9.9	0	0	0	7.9
MISCELLANEOUS 3/	0	13.8	0	0	0	13.8	0	0
NOT USED 4/	0	420.4	0	161.2	0	259.2	0	305.7
TOTAL	0	667.5	0	394.5	0	273.0	0	313.6
SCOTT								
FIBER PRODUCTS 2/	5.1	121.7	5.1	121.7	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	2.9	0	2.9	0	0	0	2.3
MISCELLANEOUS 3/	0	20.3	0	0	0	20.3	0	0
NOT USED 4/	3.5	160.1	0	55.6	3.5	104.5	4.0	140.9
TOTAL	8.6	305.0	5.1	180.2	3.5	124.8	4.0	143.2
WARRICK								
FIBER PRODUCTS 2/	.7	376.8	.7	376.8	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	.3	182.6	0	0	.3	182.6	.4	239.6
DOMESTIC FUEL	0	21.3	0	21.3	0	0	0	16.9
MISCELLANEOUS 3/	.1	93.0	0	0	.1	93.0	.1	29.9
NOT USED 4/	0	0	0	0	0	0	.1	29.9
TOTAL	1.1	673.7	.7	398.1	.4	275.6	.6	316.3
WASHINGTON								
FIBER PRODUCTS 2/	0	70.8	0	70.8	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	23.0	0	21.5	0	1.5	0	17.1
MISCELLANEOUS 3/	0	22.8	0	0	0	22.8	0	0
NOT USED 4/	0	192.1	0	90.1	0	102.0	0	128.0
TOTAL	0	308.7	0	182.4	0	126.3	0	145.1

TABLE CONTINUED ON NEXT PAGE

TABLE 4 CONTINUED — KNOBS UNIT

TYPE OF USE BY COUNTY OR UNIT	WOOD RESIDUE: TOTAL: SOFTWOOD	TOTAL: HARDWOOD	COARSE: SOFTWOOD	COARSE: HARDWOOD	FINE: SOFTWOOD	FINE: HARDWOOD	BARK: SOFTWOOD	BARK: HARDWOOD
	THOUSAND CUBIC FEET							
ALL COUNTIES — KNOBS UNIT								
FIBER PRODUCTS 2/	5.8	1264.0	5.8	1264.0	0	0	0	0
CHARCOAL	0	46.8	0	46.8	0	0	0	0
INDUSTRIAL FUEL	.3	400.1	0	129.2	.3	270.9	.4	342.2
DOMESTIC FUEL	0	453.1	0	425.8	0	27.3	0	331.0
MISCELLANEOUS 3/	.1	824.7	0	86.3	.1	738.4	.1	119.1
NOT USED 4/	3.5	2267.9	0	1136.8	3.5	1131.1	4.1	1696.5
TOTAL	9.7	5256.6	5.8	3088.9	3.9	2167.7	4.6	2488.8
	UPLAND FLATS UNIT							
DEARBORN								
FIBER PRODUCTS 2/	0	86.8	0	86.8	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	1.3	0	0	0	1.3	0	0
MISCELLANEOUS 3/	0	12.3	0	0	0	12.3	0	34.5
NOT USED 4/	0	50.4	0	2.3	0	48.1	0	36.4
TOTAL	0	150.8	0	89.1	0	61.7	0	70.9
FAYETTE								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	12.0	0	12.0	0	0	0	9.6
MISCELLANEOUS 3/	0	27.8	0	0	0	27.8	0	0
NOT USED 4/	0	28.1	0	28.1	0	0	0	22.3
TOTAL	0	67.9	0	40.1	0	27.8	0	31.9
FRANKLIN								
FIBER PRODUCTS 2/	0	90.4	0	90.4	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	3.8	0	3.8	0	0	0	2.9
MISCELLANEOUS 3/	0	65.5	0	0	0	65.5	0	0
NOT USED 4/	0	10.5	0	6.3	0	4.2	0	77.0
TOTAL	0	170.2	0	100.5	0	69.7	0	79.9
JEFFERSON								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	3.6	0	3.6	0	0	0	2.8
DOMESTIC FUEL	.1	11.9	.1	11.9	0	0	.1	7.1
MISCELLANEOUS 3/	.1	13.1	0	0	.1	13.1	0	0
NOT USED 4/	0	60.4	0	37.1	0	23.3	0	31.8
TOTAL	.2	89.0	.1	52.6	.1	36.4	.1	41.7

TABLE CONTINUED ON NEXT PAGE

TABLE 4 CONTINUED — UPLAND FLATS UNIT

TYPE OF USE BY COUNTY OR UNIT	WOOD RESIDUE							
	TOTAL		COARSE		FINE		BARK	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
	THOUSAND CUBIC FEET							
JENNINGS								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	24.8	0	24.8	0	0	0	19.7
MISCELLANEOUS 3/	0	16.4	0	0	0	16.4	0	0
NOT USED 4/	0	29.7	0	17.1	0	12.6	0	13.6
TOTAL	0	70.9	0	41.9	0	29.0	0	33.3
RIPLEY								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	16.0	0	10.4	0	5.6	0	8.3
MISCELLANEOUS 3/	0	25.4	0	0	0	25.4	0	0
NOT USED 4/	0	39.0	0	37.1	0	1.9	0	29.6
TOTAL	0	80.4	0	47.5	0	32.9	0	37.9
ALL COUNTIES — UPLAND FLATS UNIT								
FIBER PRODUCTS 2/	0	177.2	0	177.2	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	3.6	0	3.6	0	0	0	2.8
DOMESTIC FUEL	.1	69.8	.1	62.9	0	6.9	.1	47.6
MISCELLANEOUS 3/	.1	160.5	0	0	.1	160.5	0	34.5
NOT USED 4/	0	218.1	0	128.0	0	90.1	0	210.7
TOTAL	.2	629.2	.1	371.7	.1	257.5	.1	295.6
NORTHERN UNIT								
ADAMS								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	7.8	0	7.8	0	0	0	6.2
MISCELLANEOUS 3/	0	26.9	0	0	0	26.9	0	0
NOT USED 4/	0	31.1	0	31.1	0	0	0	24.8
TOTAL	0	65.8	0	38.9	0	26.9	0	31.0
ALLEN								
FIBER PRODUCTS 2/	0	38.1	0	38.1	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	16.2	0	16.2	0	0	0	12.9
MISCELLANEOUS 3/	0	37.6	0	0	0	37.6	0	9.1
NOT USED 4/	0	0	0	0	0	0	0	21.2
TOTAL	0	91.9	0	54.3	0	37.6	0	43.2

TABLE CONTINUED ON NEXT PAGE

TABLE 4 CONTINUED — NORTHERN UNIT

TYPE OF USE BY COUNTY OR UNIT	WOOD RESIDUE							
	TOTAL		COARSE		FINE		BARK	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
	THOUSAND CUBIC FEET							
BARTHOLOMEW								
FIBER PRODUCTS 2/	0	113.9	0	113.9	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	0	0	0	0	0	0	0
MISCELLANEOUS 3/	0	74.9	0	0	0	74.9	0	4.5
NOT USED 4/	0	3.9	0	0	0	3.9	0	86.0
TOTAL	0	192.7	0	113.9	0	78.8	0	90.5
BLACKFORD								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	1.6	0	1.6	0	0	0	1.2
MISCELLANEOUS 3/	0	2.2	0	0	0	2.2	0	0
NOT USED 4/	0	26.5	0	16.3	0	10.2	0	12.9
TOTAL	0	30.3	0	17.9	0	12.4	0	14.1
BOONE								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	1.0	0	1.0	0	0	0	.8
MISCELLANEOUS 3/	0	7.0	0	0	0	7.0	0	0
NOT USED 4/	0	9.1	0	9.1	0	0	0	7.2
TOTAL	0	17.1	0	10.1	0	7.0	0	8.0
CASS								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	2.6	0	2.6	0	0	0	2.1
MISCELLANEOUS 3/	0	59.6	0	0	0	59.6	0	0
NOT USED 4/	0	101.0	0	93.9	0	7.1	0	74.7
TOTAL	0	163.2	0	96.5	0	66.7	0	76.8
DECATUR								
FIBER PRODUCTS 2/	0	136.4	0	136.4	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	4.4	0	4.4	0	0	0	3.5
MISCELLANEOUS 3/	0	102.7	0	0	0	102.7	0	0
NOT USED 4/	0	61.2	0	39.3	0	21.9	0	139.6
TOTAL	0	304.7	0	180.1	0	124.6	0	143.1

TABLE CONTINUED ON NEXT PAGE

TABLE 4 CONTINUED — NORTHERN UNIT

TYPE OF USE BY COUNTY OR UNIT	WOOD RESIDUE							
	TOTAL		COARSE		FINE		BARK	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
	THOUSAND CUBIC FEET							
DEKALB								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	10.3	0	8.1	0	2.2	0	2.6
DOMESTIC FUEL	0	25.8	0	24.7	0	1.1	0	13.2
MISCELLANEOUS 3/	0	28.3	0	3.2	0	25.1	0	7.7
NOT USED 4/	0	19.0	0	13.3	0	5.7	0	15.7
TOTAL	0	83.4	0	49.3	0	34.1	0	39.2
ELKHART								
FIBER PRODUCTS 2/	0	162.3	0	162.3	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	53.4	0	30.9	0	22.5	0	24.6
DOMESTIC FUEL	0	0	0	0	0	0	0	0
MISCELLANEOUS 3/	0	109.2	0	0	0	109.2	0	54.3
NOT USED 4/	0	25.8	0	14.0	0	11.8	0	85.9
TOTAL	0	350.7	0	207.2	0	143.5	0	164.8
FOUNTAIN								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	5.8	0	5.8	0	0	0	4.6
MISCELLANEOUS 3/	0	24.7	0	0	0	24.7	0	0
NOT USED 4/	0	159.2	0	106.3	0	52.9	0	84.5
TOTAL	0	189.7	0	112.1	0	77.6	0	89.1
FULTON								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	306.4	0	188.8	0	117.6	0	150.1
DOMESTIC FUEL	0	2.3	0	2.3	0	0	0	1.9
MISCELLANEOUS 3/	0	14.7	0	0	0	14.7	0	0
NOT USED 4/	0	0	0	0	0	0	0	0
TOTAL	0	323.4	0	191.1	0	132.3	0	152.0
GRANT								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	2.5
DOMESTIC FUEL	0	10.5	0	10.5	0	0	0	0
MISCELLANEOUS 3/	0	14.6	0	0	0	14.6	0	0
NOT USED 4/	0	10.5	0	10.5	0	0	0	14.2
TOTAL	0	35.6	0	21.0	0	14.6	0	16.7

TABLE CONTINUED ON NEXT PAGE

TABLE 4 CONTINUED — NORTHERN UNIT

TYPE OF USE BY COUNTY OR UNIT	WOOD RESIDUE							
	TOTAL		COARSE		FINE		BARK	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
	THOUSAND CUBIC FEET							
HENDRICKS								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	.2	0	.2	0	0	0	.1
MISCELLANEOUS 3/	0	.4	0	0	0	.4	0	0
NOT USED 4/	0	.5	0	.5	0	0	0	.4
TOTAL	0	1.1	0	.7	0	.4	0	.5
HENRY								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	12.2	0	12.2	0	0	0	9.7
MISCELLANEOUS 3/	0	11.9	0	0	0	11.9	0	0
NOT USED 4/	0	5.5	0	5.3	0	.2	0	4.2
TOTAL	0	29.6	0	17.5	0	12.1	0	13.9
HOWARD								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	13.8	0	13.8	0	0	0	10.9
MISCELLANEOUS 3/	0	9.5	0	0	0	9.5	0	0
NOT USED 4/	0	0	0	0	0	0	0	0
TOTAL	0	23.3	0	13.8	0	9.5	0	10.9
HUNTINGTON								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	7.0	0	7.0	0	0	0	5.6
MISCELLANEOUS 3/	0	14.1	0	0	0	14.1	0	0
NOT USED 4/	0	13.3	0	13.3	0	0	0	10.5
TOTAL	0	34.4	0	20.3	0	14.1	0	16.1
JAY								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	57.0	0	57.0	0	0	0	45.3
MISCELLANEOUS 3/	0	39.5	0	0	0	39.5	0	0
NOT USED 4/	0	0	0	0	0	0	0	0
TOTAL	0	96.5	0	57.0	0	39.5	0	45.3

TABLE CONTINUED ON NEXT PAGE

TABLE 4 CONTINUED — NORTHERN UNIT

TYPE OF USE BY COUNTY OR UNIT	WOOD RESIDUE						BARK	
	TOTAL		COARSE		FINE			
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
	THOUSAND CUBIC FEET							
JOHNSON								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	239.0	0	137.7	0	101.3	0	116.4
DOMESTIC FUEL	0	10.9	0	10.9	0	0	0	8.7
MISCELLANEOUS 3/	0	17.5	0	8.6	0	8.9	0	0
NOT USED 4/	0	1.9	0	1.9	0	0	0	1.5
TOTAL	0	269.3	0	159.1	0	110.2	0	126.6
KOSCIUSKO								
FIBER PRODUCTS 2/	0	33.7	0	33.7	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	47.6	0	47.6	0	0	0	37.9
MISCELLANEOUS 3/	0	92.5	0	0	0	92.5	0	0
NOT USED 4/	0	52.2	0	52.2	0	0	0	68.3
TOTAL	0	226.0	0	133.5	0	92.5	0	106.2
LAGRANGE								
FIBER PRODUCTS 2/	0	101.4	0	101.4	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	83.7	0	83.7	0	0	0	66.6
MISCELLANEOUS 3/	0	128.2	0	0	0	128.2	0	80.6
NOT USED 4/	0	61.8	0	36.5	0	25.3	0	29.0
TOTAL	0	375.1	0	221.6	0	153.5	0	176.2
LAPORTE								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	4.9	0	4.9	0	0	0	3.9
MISCELLANEOUS 3/	0	3.4	0	0	0	3.4	0	0
NOT USED 4/	0	0	0	0	0	0	0	0
TOTAL	0	8.3	0	4.9	0	3.4	0	3.9
MARION								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	19.3	0	19.3	0	0	0	15.4
MISCELLANEOUS 3/	0	13.4	0	0	0	13.4	0	0
NOT USED 4/	0	0	0	0	0	0	0	0
TOTAL	0	32.7	0	19.3	0	13.4	0	15.4

TABLE CONTINUED ON NEXT PAGE

TABLE 4 CONTINUED — NORTHERN UNIT

TYPE OF USE BY COUNTY OR UNIT	WOOD RESIDUE						BARK	
	TOTAL		COARSE		FINE			
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
	THOUSAND CUBIC FEET							
MARSHALL								
FIBER PRODUCTS 2/	0	96.7	0	96.7	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	2.4	0	2.4	0	0	0	1.9
DOMESTIC FUEL	0	87.5	0	87.5	0	0	0	69.5
MISCELLANEOUS 3/	0	130.3	0	0	0	130.3	0	19.2
NOT USED 4/	0	84.3	0	50.5	0	33.8	0	97.9
TOTAL	0	401.2	0	237.1	0	164.1	0	188.5
MIAMI								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	14.0	0	14.0	0	0	0	11.2
DOMESTIC FUEL	0	17.0	0	17.0	0	0	0	13.5
MISCELLANEOUS 3/	0	30.9	0	0	0	30.9	0	0
NOT USED 4/	0	19.4	0	17.0	0	2.4	0	13.5
TOTAL	0	81.3	0	48.0	0	33.3	0	38.2
MONTGOMERY								
FIBER PRODUCTS 2/	0	87.4	0	87.4	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	0	0	0	0	0	0	0
MISCELLANEOUS 3/	0	60.5	0	0	0	60.5	0	0
NOT USED 4/	0	0	0	0	0	0	0	69.5
TOTAL	0	147.9	0	87.4	0	60.5	0	69.5
NOBLE								
FIBER PRODUCTS 2/	0	173.6	0	173.6	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	17.2	0	15.6	0	1.6	0	0
MISCELLANEOUS 3/	0	.8	0	0	0	.8	0	.9
NOT USED 4/	0	138.5	0	5.9	0	132.6	0	154.1
TOTAL	0	330.1	0	195.1	0	135.0	0	155.0
RANDOLPH								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	0	0	0	0	0	0	0
MISCELLANEOUS 3/	0	168.9	0	99.8	0	69.1	0	0
NOT USED 4/	0	0	0	0	0	0	0	79.3
TOTAL	0	168.9	0	99.8	0	69.1	0	79.3

TABLE CONTINUED ON NEXT PAGE

TABLE 4 CONTINUED — NORTHERN UNIT

TYPE OF USE BY COUNTY OR UNIT	WOOD RESIDUE						BARK	
	TOTAL		COARSE		FINE			
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
	THOUSAND CUBIC FEET							
RUSH								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	12.2	0	12.2	0	0	0	9.7
MISCELLANEOUS 3/	0	15.2	0	0	0	15.2	0	0
NOT USED 4/	0	13.9	0	12.2	0	1.7	0	9.7
TOTAL	0	41.3	0	24.4	0	16.9	0	19.4
ST. JOSEPH								
FIBER PRODUCTS 2/	0	56.6	0	56.6	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	182.9	0	84.9	0	98.0	0	112.5
DOMESTIC FUEL	0	0	0	0	0	0	0	0
MISCELLANEOUS 3/	0	0	0	0	0	0	0	0
NOT USED 4/	0	0	0	0	0	0	0	0
TOTAL	0	239.5	0	141.5	0	98.0	0	112.5
SHELBY								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	24.8	0	24.8	0	0	0	1.3
MISCELLANEOUS 3/	0	22.9	0	0	0	22.9	0	0
NOT USED 4/	0	8.3	0	8.3	0	0	0	25.0
TOTAL	0	56.0	0	33.1	0	22.9	0	26.3
STARKE								
FIBER PRODUCTS 2/	0	39.9	0	39.9	0	0	0	31.7
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	0	0	0	0	0	0	0
MISCELLANEOUS 3/	0	13.8	0	0	0	13.8	0	0
NOT USED 4/	0	106.2	0	54.6	0	51.6	0	43.4
TOTAL	0	159.9	0	94.5	0	65.4	0	75.1
STEUBEN								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	1.2	0	1.2	0	0	0	1.0
DOMESTIC FUEL	0	54.5	0	54.5	0	0	0	31.7
MISCELLANEOUS 3/	0	44.7	0	2.5	0	42.2	0	3.9
NOT USED 4/	0	4.9	0	4.1	0	.8	0	13.0
TOTAL	0	105.3	0	62.3	0	43.0	0	49.6

TABLE CONTINUED ON NEXT PAGE

TABLE 4 CONTINUED — NORTHERN UNIT

TYPE OF USE BY COUNTY OR UNIT	WOOD RESIDUE						BARK	
	TOTAL		COARSE		FINE			
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
	THOUSAND CUBIC FEET							
WABASH								
FIBER PRODUCTS 2/	0	48.2	0	48.2	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	0	0	0	0	0	0	0
MISCELLANEOUS 3/	0	33.4	0	0	0	33.4	0	1.9
NOT USED 4/	0	0	0	0	0	0	0	36.4
TOTAL	0	81.6	0	48.2	0	33.4	0	38.3
WARREN								
FIBER PRODUCTS 2/	0	56.1	0	56.1	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	0	0	0	0	0	0	0
MISCELLANEOUS 3/	0	.4	0	0	0	.4	0	0
NOT USED 4/	0	38.5	0	0	0	38.5	0	44.6
TOTAL	0	95.0	0	56.1	0	38.9	0	44.6
WAYNE								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	2.8	0	2.8	0	0	0	2.2
MISCELLANEOUS 3/	0	18.8	0	0	0	18.8	0	0
NOT USED 4/	0	32.9	0	29.4	0	3.5	0	23.4
TOTAL	0	54.5	0	32.2	0	22.3	0	25.6
WHITE								
FIBER PRODUCTS 2/	0	0	0	0	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	8.5	0	8.5	0	0	0	6.8
MISCELLANEOUS 3/	0	14.7	0	0	0	14.7	0	0
NOT USED 4/	0	280.2	0	170.8	0	109.4	0	135.8
TOTAL	0	303.4	0	179.3	0	124.1	0	142.6
WHITLEY								
FIBER PRODUCTS 2/	0	133.5	0	133.5	0	0	0	0
CHARCOAL	0	0	0	0	0	0	0	0
INDUSTRIAL FUEL	0	0	0	0	0	0	0	0
DOMESTIC FUEL	0	92.4	0	0	0	92.4	0	0
MISCELLANEOUS 3/	0	0	0	0	0	0	0	0
NOT USED 4/	0	0	0	0	0	0	0	106.1
TOTAL	0	225.9	0	133.5	0	92.4	0	106.1

TABLE CONTINUED ON NEXT PAGE

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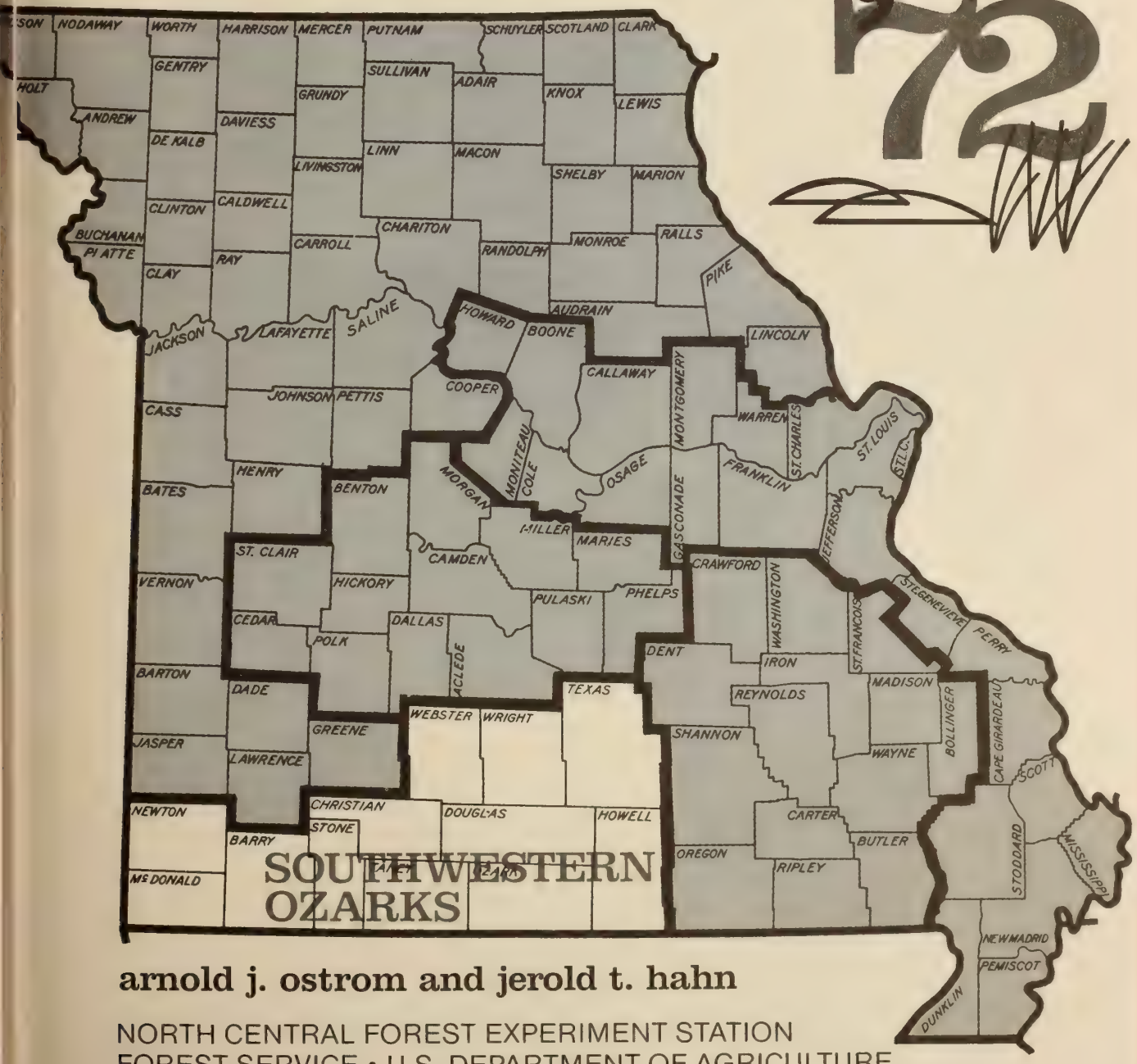

arnold j. ostrom and jerold t. hahn

NORTH CENTRAL FOREST EXPERIMENT STATION
FOREST SERVICE • U.S. DEPARTMENT OF AGRICULTURE

Some Recent Forest Survey Reports Published by
the North Central Forest Experiment Station

Primary forest products industry and industrial roundwood production, Michigan, 1969, by James E. Blyth and Allen H. Boelter. USDA For. Serv. Resour. Bull. NC-12, 12 p., illus. 1971.

Kansas saw-log production jumps 38 percent from 1964 to 1969, by James E. Blyth and Leonard K. Gould. USDA For. Serv. Res. Note NC-128, 2 p., illus. 1971.

Wisconsin's 1968 timber resource--a perspective, by John S. Spencer, Jr. and Harry W. Thorne. USDA For. Serv. Resour. Bull. NC-15, 80 p., illus. 1972.

Missouri's primary forest products output and industries, 1969, by James E. Blyth and Robert Massengale. USDA For. Serv. Resour. Bull. NC-16, 15 p., illus. 1972.

Forest area in Wisconsin counties, 1968, by Burton L. Essex. USDA For. Serv. Res. Note NC-135, 4 p., illus. 1972.

Iowa saw-log production and sawmill industry, 1969, by James E. Blyth and William A. Farris. USDA For. Serv. Res. Note NC-136, 4 p., illus. 1972.

Timber volume in Wisconsin counties, by Arnold J. Ostrom. USDA For. Serv. Res. Note NC-145, 4 p., illus. 1972.

Pulpwood production in the North Central Region by county, 1971, by James E. Blyth. USDA For. Serv. Resour. Bull. NC-17, 21 p., illus. 1973.

Pulpwood production in the North Central Region by county, 1972, by James E. Blyth. USDA For. Serv. Resour. Bull. NC-18, 16 p., illus. 1973.

Lake States pulpwood production dips to 4 million cords in 1971, by James E. Blyth. USDA For. Serv. Res. Note NC-148, 3 p. 1973.

Local net timber volume equations for Wisconsin, by Jerold T. Hahn. USDA For. Serv. Res. Note NC-149, 4 p., illus. 1973.

Pulpwood production in the Lake States by county, 1972, by James E. Blyth. USDA For. Serv. Res. Note NC-152, 4 p. 1973.

FOREWORD

Forest Survey is a continuing endeavor as mandated by the McSweeney-McNary Forest Research Act of 1928. Its objective is to inventory periodically the Nation's forest lands to determine their extent, condition, and volumes of timber, growth, and depletions. This kind of up-to-date information is essential to frame intelligent forest policies and programs. USDA Forest Service regional experiment stations are charged with the responsibility for conducting these inventories and publishing summary reports for individual States. The North Central Forest Experiment Station is responsible for Forest Survey work done in Michigan, Wisconsin, Minnesota, North Dakota, eastern South Dakota, Nebraska, Iowa, Illinois, Indiana, Missouri, and Kansas.

Fieldwork for the 1972 Missouri Forest Survey was started in January 1970 and was completed in May 1973. Reports on the two previous surveys of Missouri's timber resource are dated 1947 and 1959. These earlier reports provide a basis for comparison with the information in this report for those interested in trends that have developed over the past quarter century.

Similar Resource Bulletins reporting statistical highlights and detailed tables on the timber resource of the other Survey Units in Missouri (see cover) are available or are in preparation. These will provide the basis for a comprehensive analysis of the timber resource of the entire State which will be published as a separate report.

A higher degree of accuracy of survey information was obtained during the 1972 survey than otherwise would have been feasible because of intensified field sampling made possible by extra funding provided the North Central Station by the State Legislature through the Missouri Department of Conservation. The Department also conducted a canvass of primary wood-using plants in the State, which was used to help in estimating the quantity of timber products harvested in Missouri.

Personnel from the National Forests in Missouri installed sample plots on national forest lands, which were used to inventory those lands. The USDA Agricultural Stabilization and Conservation Service and the State Historical Society of Missouri furnished aerial photos used in the survey.

NOTE

References to information concerning growth, mortality, and removals are dated 1971, but information concerning forest area and timber inventory incorporates changes that occurred during calendar year 1971; therefore, they represent conditions as of January 1, 1972 and are dated 1972.

Many of the terms used in this Resource Bulletin have specialized meanings, which are defined in "Glossary of Terms used in Resource Bulletins Reporting Missouri's 1972 Timber Resource." Copies of this Glossary can be obtained from the North Central Forest Experiment Station.

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TIMBER RESOURCE OF MISSOURI'S SOUTHWESTERN OZARKS, 1972

Arnold J. Ostrom and Jerold T. Hahn

HIGHLIGHTS[1/]

Forest Area

Forest land covers 2.4 million acres, 45 percent of the Unit's land area. In 1959 the area was 3.0 million acres, 53 percent of the land area.

Commercial forests occupy 2.3 million acres compared with 2.8 million acres in 1959.

Texas County contains the largest area of commercial forest in the Unit (374 thousand acres), followed by Howell County (271 thousand acres) and Douglas County (246 thousand acres).

Poletimber stands (32 percent of the commercial forest area), sawtimber stands (31 percent), and sapling and seedling stands (30 percent) are almost equal in area. Nonstocked areas make up the remaining 7 percent.

The black-scarlet oak type (910 thousand acres) embraces the largest area of commercial forest of all forest types, followed by the post-blackjack oak type (724 thousand acres).

Farmers, private individuals, and corporations not directly engaged in timber processing own 83 percent of the commercial forest.

1/ Published 1959 statistics have been adjusted to be comparable with 1972 data because of changed definitions and procedures used during the two surveys.

Timber Volume

Growing-stock volume on commercial forest land is 851 million cubic feet (10.8 million cords), as compared to 958 million cubic feet (12.1 million cords) in 1959.

Sawtimber volume is 2.1 billion board feet, as compared to 2.2 billion board feet in 1959.

The oaks account for three-fourths of the 1972 growing-stock volume.

Average volume per acre of growing stock is 368 cubic feet (4.7 cords), compared to 340 cubic feet (4.3 cords) in 1959.

Farmers, private individuals, and corporations not directly engaged in timber processing own 81 percent of the growing-stock volume.

The volume of rough and rotten trees that are alive on commercial forest land is 557 million cubic feet (7.0 million cords), equal to two-thirds of the growing-stock volume.

Stand Conditions

Net annual growth on growing-stock trees was 25 million cubic feet (321 thousand cords) in 1971.

The net annual growth rate of growing stock was 3.0 percent of inventory volume.

Mortality of growing-stock trees in 1971 amounted to 1.9 million cubic feet (24

thousand cords), and was attributed chiefly to disease and the effects of weather.

Two-thirds of the commercial forest is capable of accruing less than 50 cubic feet of growth per acre per year.

Sixty-three percent of the commercial forest is composed of stands younger than 50 years old.

Seventy-one percent of the commercial forest is capable of growing trees 50 feet and taller at age 50, but only 18 percent is capable of growing trees 70 feet and taller at the same age.

Seventy percent of the commercial forest is poorly stocked with growing-stock trees. Only 8 percent is nonstocked with these trees. (See glossary for nonstocked areas, page 2.)

Timber Use

Timber removals from growing stock amounted to 32 million cubic feet (406 thousand cords) in 1971, compared to a net annual growth on growing-stock trees of 25 million cubic feet (321 thousand cords). (See glossary for timber removals, page 5.)

Half of the volume of timber removals was derived from "other" removals; therefore, it was not utilized. (See glossary for timber removals, page 5.)

Timber products output in 1969 totaled 26 million cubic feet, of which 13.4 million was in growing stock.

Volume of residues from primary plants in 1969 was 6.5 million cubic feet, of which 4.1 million cubic feet were unused.2/

Allowable Cut

For the period 1972-1981, the annual allowable cut from growing stock was estimated to average 23 million cubic feet (287 thousand cords)--20 million cubic feet from harvest cuttings and 3 million cubic feet from thinnings.

For the same period an additional annual allowable cut from rough and rotten (nongrowing-stock) trees was estimated to average 14 million cubic feet (172 thousand cords).

TABLES

Area:

1. Area of land by land class, 1959 and 1972.

2. Area of land and forest land, by county.

3. Area of commercial forest land for survey unit and for individual counties within unit, by forest type and stand-size class.

4. Area of commercial forest land, by county and ownership class.

5. Area of commercial forest land, by stand-volume and ownership class.

6. Area of commercial forest land, by area-condition and ownership class.

7. Area of commercial forest land, by site and ownership class.

8. Area of commercial forest land, by forest type and ownership class.

9. Area of commercial forest land, by forest type and stand-age class.

10. Area of commercial forest land, by forest type and site-index class.

11. Area of commercial forest land, by forest type and basal-area class.

12. Area of commercial forest land, by forest type, stand-size, and site class.

13. Area of commercial forest land, by stocking class based on selected stand components.

14. Area of commercial forest land, by stocking class of growing-stock trees and stand-size class.

15. Area of noncommercial forest land, by ownership class.

2/ Primary plants are those using logs and bolts or chips, shavings, etc., from logs and bolts.

16. Area of noncommercial forest land, by forest type.

Number of Trees:

17. Number of all live trees on commercial forest land, by species and diameter class.

18. Number of growing-stock trees on commercial forest land, by species and diameter class.

19. Number of short-log trees on commercial forest land, by species and diameter class.

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20. Net volume of growing stock and sawtimber on commercial forest land, by species, 1959 and 1972.

21. Net volume on commercial forest land for survey unit and for individual counties within unit, by species and kind of material.

22. Net volume of timber on commercial forest land, by class of timber, and softwoods and hardwoods.

23. Net volume of growing stock, sawtimber, and rough and rotten trees on commercial forest land, by individual species.

24. Net volume of growing stock and sawtimber on commercial forest land, by ownership class and species group.

25. Net volume of growing stock on commercial forest land, by species and diameter class.

26. Net volume of sawtimber on commercial forest land, by species and diameter class.

27. Net volume of growing stock on commercial forest land, by species and forest type.

28. Net volume of sawtimber on commercial forest land, by species and forest type.

29. Net volume of timber in cull trees on commercial forest land, by species and cull tree class.

30. Net volume of short-log trees on commercial forest land, by species and diameter class.

31. Net volume of sawtimber on commercial forest land, by species and log grade class.

32. Walnut volume on nonforest land, by diameter class and class of timber.

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34. Timber removals from growing stock and sawtimber on commercial forest land, by item and species group.

35. Timber removals from growing stock and sawtimber on commercial forest land, by species and county.

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36. Annual mortality of growing stock and sawtimber on commercial forest land, by cause and softwoods and hardwoods.

37. Annual mortality of growing stock and sawtimber on commercial forest land, by species.

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38. Output of timber products, by source of material and softwoods and hardwoods.

39. Forest products harvested, by ownership class and product.

40. Volume of primary plant residue, by kind of material and type of use.

41. Timber products output from roundwood, by species and product.

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43. Average annual allowable cut of growing stock for 1972-1981 from harvest cuttings and thinnings on commercial forest land, by species and forest type.

44. Average annual allowable cut of growing stock for 1972-1981 from harvest cuttings and thinnings on commercial forest land, by species and stand-volume class.

45. Average annual allowable cut for 1972-1981, by harvest cuttings of growing stock on commercial forest land, by species and stand-volume class.

46. Average annual allowable cut for 1972-1981, by thinnings of growing stock on commercial forest land, by species and stand-volume class.

47. Average annual allowable cut of sawtimber for 1972-1981 from harvest cuttings and thinnings on commercial forest land, by species and forest type.

48. Average annual allowable cut of sawtimber for 1972-1981 from harvest cuttings and thinnings on commercial forest land, by species and stand-volume class.

49. Average annual allowable cut for 1972-1981, by harvest cuttings of sawtimber on commercial forest land, by species and stand-volume class.

50. Average annual allowable cut for 1972-1981, by thinnings of sawtimber on commercial forest land, by species and stand-volume class.

51. Area of allowable cut for 1972-1981, by harvest cuttings on commercial forest land, by forest type and stand-age class.

52. Area of allowable cut by thinnings on commercial forest land for 1972-1981, by forest type and stand-age class.

Text Tables:

53. Sampling errors for estimates smaller than unit totals of volume, net growth, and removals, and of area of commercial forest land.

54. Forest type, site index, and rotation age by management objective used in calculation of annual allowable cut, Missouri.

Table 1.--*Area of land by land class, Southwestern Ozarks, Missouri, 1959 and 1972*

(Thousand acres)

Land class	1959[1/]	1972
Commercial forest land:		
Shortleaf pine type	45.49	17.80
Eastern redcedar type	63.75	12.60
Eastern redcedar-hardwood type	83.65	85.10
Shortleaf pine-oak type	114.91	65.10
Post-blackjack oak type	437.62	723.80
Black-scarlet oak type	1,044.44	910.30
White oak type	176.52	287.50
Elm-ash-cottonwood type	51.15	29.50
Maple-beech type	--	13.70
Nonstocked	797.84	166.00
Subtotal	2,815.37	2,311.40
Noncommercial forest land:		
Unproductive	121.23	109.30
Productive-reserved	17.60	22.60
Subtotal	138.83	131.90
Nonforest land	2,573.52	2,997.00
Total	5,527.72	5,440.30

1/ Published 1959 areas have been adjusted to be comparable with 1972 areas.

Table 2.--*Area of land and forest land, by county, Southwestern Ozarks, Missouri, 1972*

County	Land area	Forest land			Commercial forest as a percent of land area
		All forest	Noncommercial	Commercial	
Barry	501.0	197.1	14.5	182.6	36
Christian	362.9	136.7	8.3	128.4	35
Douglas	517.6	254.4	8.3	246.1	48
Howell	588.8	277.3	6.7	270.6	46
McDonald	345.6	170.6	3.7	166.9	48
Newton	402.5	105.9	2.3	103.6	26
Ozark	468.1	259.1	22.8	236.3	50
Stone	287.5	131.9	7.8	124.1	43
Taney	393.9	235.7	38.2	197.5	50
Texas	757.1	384.3	10.7	373.6	49
Webster	377.6	123.4	3.2	120.2	32
Wright	437.7	166.9	5.4	161.5	37
All counties	5,440.3	2,443.3	131.9	2,311.4	42

Table 3.--*Area of commercial forest land for Missouri's Southwestern Ozarks Survey Unit and for individual counties within Unit, by forest type and stand-size class, 1972*

(Thousand acres)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
ALL COUNTIES					
Shortleaf pine	17.8	8.2	9.6	--	--
Eastern redcedar	12.6	--	--	12.6	--
Eastern redcedar-hardwood	85.1	9.0	14.1	62.0	--
Shortleaf pine-oak	65.1	30.1	22.1	12.9	--
Post-blackjack oak	723.8	177.1	258.9	287.8	--
Black-scarlet oak	910.3	331.6	306.1	272.6	--
White oak	287.5	128.9	116.4	42.2	--
Elm-ash-cottonwood	29.5	13.7	7.0	8.8	--
Maple-beech	13.7	6.7	7.0	--	--
Nonstocked 1/	166.0	--	--	--	166.0
All forest types	2,311.4	705.3	741.2	698.9	166.0
BARRY COUNTY					
Shortleaf pine	2.0	--	2.0	--	--
Eastern redcedar	1.4	--	--	1.4	--
Eastern redcedar-hardwood	11.0	1.4	1.1	8.5	--
Shortleaf pine-oak	6.6	3.4	2.3	.9	--
Post-blackjack oak	53.6	12.9	19.4	21.3	--
Black-scarlet oak	71.3	26.6	22.7	22.0	--
White oak	22.2	11.0	8.5	2.7	--
Elm-ash-cottonwood	1.8	.9	.5	.4	--
Maple-beech	.8	.3	.5	--	--
Nonstocked 1/	11.9	--	--	--	11.9
All forest types	182.6	56.5	57.0	57.2	11.9
CHRISTIAN COUNTY					
Shortleaf pine	1.1	.5	.6	--	--
Eastern redcedar	.7	--	--	.7	--
Eastern redcedar-hardwood	6.5	.4	1.0	5.1	--
Shortleaf pine-oak	3.7	1.7	1.2	.8	--
Post-blackjack oak	38.3	8.9	14.0	15.4	--
Black-scarlet oak	48.5	17.0	16.6	14.9	--
White oak	16.5	7.4	6.9	2.2	--
Elm-ash-cottonwood	2.7	1.5	.5	.7	--
Maple-beech	.7	.3	.4	--	--
Nonstocked 1/	9.7	--	--	--	9.7
All forest types	128.4	37.7	41.2	39.8	9.7
DOUGLAS COUNTY					
Shortleaf pine	3.3	1.8	1.5	--	--
Eastern redcedar	.7	--	--	.7	--
Eastern redcedar-hardwood	3.6	--	1.4	2.2	--
Shortleaf pine-oak	8.9	3.7	3.2	2.0	--
Post-blackjack oak	78.4	18.9	26.4	33.1	--
Black-scarlet oak	97.8	33.9	33.2	30.7	--
White oak	30.3	13.6	12.1	4.6	--
Elm-ash-cottonwood	2.4	1.3	.7	.4	--
Maple-beech	1.8	.9	.9	--	--
Nonstocked 1/	18.9	--	--	--	18.9
All forest types	246.1	74.1	79.4	73.7	18.9

1/ See glossary for stand-size classes (page 3)

(Table 3 cont. on next page)

(Table 3 cont.)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
HOWELL COUNTY					
Shortleaf pine	3.2	1.3	1.9	--	--
Eastern redcedar	.6	--	--	.6	--
Eastern redcedar-hardwood	3.4	--	1.3	2.1	--
Shortleaf pine-oak	8.3	4.1	2.8	1.4	--
Post-blackjack oak	86.7	22.7	30.1	33.9	--
Black-scarlet oak	113.1	45.8	34.5	32.8	--
White oak	32.5	15.4	12.7	4.4	--
Elm-ash-cottonwood	2.0	.8	.5	.7	--
Maple-beech	1.7	.9	.8	--	--
Nonstocked 1/	19.1	--	--	--	19.1
All forest types	270.6	91.0	84.6	75.9	19.1
MC DONALD COUNTY					
Eastern redcedar	.2	--	--	.2	--
Eastern redcedar-hardwood	2.0	--	.8	1.2	--
Shortleaf pine-oak	3.5	1.7	1.2	.6	--
Post-blackjack oak	54.8	14.6	21.7	18.5	--
Black-scarlet oak	71.0	27.3	25.2	18.5	--
White oak	21.7	9.7	8.9	3.1	--
Elm-ash-cottonwood	1.9	.9	.6	.4	--
Maple-beech	.9	.5	.4	--	--
Nonstocked 1/	10.9	--	--	--	10.9
All forest types	166.9	54.7	58.8	42.5	10.9
NEWTON COUNTY					
Eastern redcedar	.1	--	--	.1	--
Eastern redcedar-hardwood	1.2	--	.5	.7	--
Shortleaf pine-oak	2.1	1.1	.7	.3	--
Post-blackjack oak	33.7	9.3	12.4	12.0	--
Black-scarlet oak	42.4	17.8	13.2	11.4	--
White oak	13.0	6.3	5.3	1.4	--
Elm-ash-cottonwood	2.5	.9	.3	1.3	--
Maple-beech	.5	.3	.2	--	--
Nonstocked 1/	8.1	--	--	--	8.1
All forest types	103.6	35.7	32.6	27.2	8.1
OZARK COUNTY					
Shortleaf pine	.9	.1	.8	--	--
Eastern redcedar	1.6	--	--	1.6	--
Eastern redcedar-hardwood	10.7	2.6	1.7	6.4	--
Shortleaf pine-oak	6.4	3.3	1.8	1.3	--
Post-blackjack oak	73.6	18.4	25.6	29.6	--
Black-scarlet oak	92.5	35.3	30.8	26.4	--
White oak	29.1	14.0	11.4	3.7	--
Elm-ash-cottonwood	3.5	2.1	.9	.5	--
Maple-beech	1.2	.6	.6	--	--
Nonstocked 1/	16.8	--	--	--	16.8
All forest types	236.3	76.4	73.6	69.5	16.8

1/ See glossary for stand-size classes (page 3)

(Table 3 cont. on next page)

(Table 3 cont.)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
STONE COUNTY					
Shortleaf pine	.3	.1	.2	--	--
Eastern redcedar	.9	--	--	.9	--
Eastern redcedar-hardwood	9.4	.7	.7	8.0	--
Shortleaf pine-oak	2.9	1.4	.9	.6	--
Post-blackjack oak	36.8	8.8	14.2	13.8	--
Black-scarlet oak	45.7	16.4	16.3	13.0	--
White oak	16.9	6.8	7.0	3.1	--
Elm-ash-cottonwood	2.0	.9	.4	.7	--
Maple-beech	.6	.3	.3	--	--
Nonstocked 1/	8.6	--	--	--	8.6
All forest types	124.1	35.4	40.0	40.1	8.6
TANEY COUNTY					
Eastern redcedar	4.3	--	--	4.3	--
Eastern redcedar-hardwood	28.1	3.9	2.2	22.0	--
Shortleaf pine-oak	3.4	1.1	1.0	1.3	--
Post-blackjack oak	58.4	11.4	18.4	28.6	--
Black-scarlet oak	62.9	18.5	20.0	24.4	--
White oak	22.9	9.7	9.8	3.4	--
Elm-ash-cottonwood	.9	.4	.3	.2	--
Maple-beech	1.3	.6	.7	--	--
Nonstocked 1/	15.3	--	--	--	15.3
All forest types	197.5	45.6	52.4	84.2	15.3
TEXAS COUNTY					
Shortleaf pine	6.8	4.4	2.4	--	--
Eastern redcedar	1.4	--	--	1.4	--
Eastern redcedar-hardwood	4.6	--	1.9	2.7	--
Shortleaf pine-oak	12.9	5.5	5.0	2.4	--
Post-blackjack oak	118.8	28.2	43.2	47.4	--
Black-scarlet oak	151.3	50.9	54.5	45.9	--
White oak	46.9	19.3	19.3	8.3	--
Elm-ash-cottonwood	2.7	1.1	1.1	.5	--
Maple-beech	2.4	1.1	1.3	--	--
Nonstocked 1/	25.8	--	--	--	25.8
All forest types	373.6	110.5	128.7	108.6	25.8
WEBSTER COUNTY					
Eastern redcedar	.1	--	--	.1	--
Eastern redcedar-hardwood	2.1	--	.6	1.5	--
Shortleaf pine-oak	2.5	1.3	.8	.4	--
Post-blackjack oak	38.7	10.5	14.5	13.7	--
Black-scarlet oak	50.1	20.6	16.0	13.5	--
White oak	15.2	7.2	6.1	1.9	--
Elm-ash-cottonwood	2.5	.8	.4	1.3	--
Maple-beech	.6	.3	.3	--	--
Nonstocked 1/	8.4	--	--	--	8.4
All forest types	120.2	40.7	38.7	32.4	8.4

1/ See glossary for stand-size classes (page 3)

(Table 3 cont. on next page)

(Table 3 cont.)

WRIGHT COUNTY

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
Shortleaf pine	.2	--	.2	--	--
Eastern redcedar	.6	--	--	.6	--
Eastern redcedar-hardwood	2.5	--	.9	1.6	--
Shortleaf pine-oak	3.9	1.8	1.2	.9	--
Post-blackjack oak	52.0	12.5	19.0	20.5	--
Black-scarlet oak	63.7	21.5	23.1	19.1	--
White oak	20.3	8.5	8.4	3.4	--
Elm-ash-cottonwood	4.6	2.1	.8	1.7	--
Maple-beech	1.2	.6	.6	--	--
Nonstocked 1/	12.5	--	--	--	12.5
All forest types	161.5	47.0	54.2	47.8	12.5

1/ See glossary for stand-size classes (page 3)

(Table 3 cont. on next page)

Table 4.--*Area of commercial forest land, by county and ownership class, Southwestern Ozarks, Missouri, 1972*

(Thousand acres)

County	All ownerships	National Forest	Other federal	State, county and municipal	Forest industry	Farmer and miscellaneous private
Barry	182.6	47.5	--	.2	--	134.9
Christian	128.4	46.0	--	--	--	82.4
Douglas	246.1	37.8	--	.2	.3	207.8
Howell	270.6	47.1	--	.2	6.0	217.3
McDonald	166.9	--	--	2.1	--	164.8
Newton	103.6	--	3.0	1.3	--	99.3
Ozark	236.3	34.6	--	5.2	6.0	190.5
Stone	124.1	12.6	--	.1	--	111.4
Taney	197.5	52.2	--	.1	--	145.2
Texas	373.6	43.8	--	.4	27.2	302.2
Webster	120.2	--	--	.7	--	119.5
Wright	161.5	6.9	--	--	--	154.6
All counties	2,311.4	328.5	3.0	10.5	39.5	1,929.9

Table 5.--*Area of commercial forest land, by stand-volume and ownership class, Southwestern Ozarks, Missouri, 1972*

(Thousand acres)

Stand volume per acre (board feet) 1/	All ownerships	National Forest	Other federal	State, county, and municipal	Forest industry	Farmer and miscellaneous private
Less than 1,500	1,830.7	210.4	1.4	8.8	31.7	1,578.4
1,500 to 5,000	465.2	115.4	1.6	1.7	7.6	338.9
More than 5,000	15.5	2.7	--	--	.2	12.6
All classes	2,311.4	328.5	3.0	10.5	39.5	1,929.9

1/ International 1/4-inch rule.

Table 6.--*Area of commercial forest land, by area-condition and ownership class, Southwestern Ozarks, Missouri, 1972*

(Thousand acres)

Area-condition class 1/	All ownerships	National Forest	Other federal	State, county and municipal;	Forest industry	Farmer and miscellaneous private
50	50.0	25.3	--	--	3.0	21.7
60	486.7	164.2	--	--	19.8	302.7
70	1,774.7	139.0	3.0	10.5	16.7	1,605.5
All classes	2,311.4	328.5	3.0	10.5	39.5	1,929.9

1/ See glossary for area-condition classes (page 2).

Table 7.--*Area of commercial forest land, by site and ownership class, Southwestern Ozarks, Missouri, 1972*

(Thousand acres)

Site class (cubic feet of growth per acre per year)	All ownerships	National Forest	Other federal	State, county and municipal	Forest industry	Farmer and miscellaneous private
85-119	80.6	11.4	--	--	1.4	67.8
50-84	643.8	46.7	3.0	1.6	5.6	586.9
Less than 50	1,587.0	270.4	--	8.9	32.5	1,275.2
All classes	2,311.4	328.5	3.0	10.5	39.5	1,929.9

Table 8.--*Area of commercial forest land, by forest type and ownership class, Southwestern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type	All ownerships	National Forest 1/	Other federal	State, county and municipal	Forest industry	Farmer and miscellaneous private
Shortleaf pine	17.8	17.6	--	--	--	.2
Eastern redcedar	12.6	8.9	--	--	--	3.7
Eastern redcedar-hardwood	85.1	61.3	--	--	--	23.8
Shortleaf pine-oak	65.1	36.9	--	--	--	28.2
Post-blackjack oak	723.8	26.2	3.0	1.8	14.0	678.8
Black-scarlet oak	910.3	134.0	--	5.3	16.6	754.4
White oak	287.5	39.1	--	--	5.4	243.0
Elm-ash-cottonwood	29.5	.9	--	--	--	28.6
Maple-beech	13.7	--	--	1.6	--	12.1
Nonstocked 2/	166.0	3.6	--	1.8	3.5	157.1
All forest types	2,311.4	328.5	3.0	10.5	39.5	1,929.9

1/ Estimates of area of some forest types for National Forest owner differ from those shown in current timber management plans for the National Forests in Missouri.

2/ See glossary for stand-size classes (page 3).

Table 9.--*Area of commercial forest land, by forest type and stand-age class, Southwestern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type	All ages	Stand-age class (years)											
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-119	120+
Shortleaf pine	17.8	--	4.8	2.4	2.4	--	2.1	6.1	--	--	--	--	--
Eastern redcedar	12.6	--	3.2	3.1	6.3	--	--	--	--	--	--	--	--
Eastern redcedar-hardwood	85.1	2.7	26.9	16.2	14.3	11.1	7.1	2.3	--	2.2	--	2.3	--
Shortleaf pine-oak	65.1	9.6	--	6.8	5.7	6.2	23.4	9.8	3.6	--	--	--	--
Post-blackjack oak	723.8	105.3	160.8	57.3	80.3	81.0	70.2	47.0	51.0	15.8	11.8	23.7	19.6
Black-scarlet oak	910.3	132.6	124.9	66.2	133.5	114.9	99.0	107.3	60.0	15.8	28.1	20.0	8.0
White oak	287.5	21.1	14.1	19.9	10.4	57.7	47.2	62.3	18.2	7.5	14.6	14.5	--
Elm-ash-cottonwood	29.5	4.4	4.4	3.5	3.5	2.8	8.2	2.7	--	--	--	--	--
Maple-beech	13.7	--	--	--	3.5	6.8	--	--	--	3.4	--	--	--
Nonstocked 1/	166.0	43.6	40.3	19.4	7.6	17.6	7.4	7.6	11.5	--	3.8	--	7.2
All forest types	2,311.4	319.3	379.4	194.8	267.5	298.1	264.6	245.1	144.3	44.7	58.3	60.5	34.8

1/ See glossary for stand-size classes (page 3).

Table 10.--*Area of commercial forest land, by forest type and site-index class, Southwestern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type	All classes	Site-index class (height in feet at 50 years)							
		20-29	30-39	40-49	50-59	60-69	70-79	80-89	90+
Shortleaf pine	17.8	--	--	6.9	6.5	4.4	--	--	--
Eastern redcedar	12.6	6.3	6.3	--	--	--	--	--	--
Eastern redcedar-hardwood	85.1	2.7	42.6	26.9	6.7	3.5	--	2.7	--
Shortleaf pine-oak	65.1	--	--	16.8	22.0	19.1	7.2	--	--
Post-blackjack oak	723.8	19.0	93.8	209.1	200.5	110.0	72.9	18.5	--
Black-scarlet oak	910.3	3.6	8.1	115.1	356.4	182.2	174.7	66.2	4.0
White oak	287.5	--	7.0	47.2	151.0	58.2	17.4	6.7	--
Elm-ash-cottonwood	29.5	--	--	--	2.8	16.1	6.2	--	4.4
Maple-beech	13.7	--	--	--	7.0	3.4	3.3	--	--
Nonstocked 1/	166.0	10.9	25.7	29.6	60.4	7.6	20.6	11.2	--
All forest types	2,311.4	42.5	183.5	451.6	813.3	404.5	302.3	105.3	8.4

1/ See glossary for stand-size classes (page 3).

Table 11.--*Area of commercial forest land, by forest type and basal-area class, Southwestern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type	All classes	Basal area class (square feet per acre)						
		0-19	20-39	40-59	60-79	80-99	100-119	120-139
Shortleaf pine	17.8	--	--	4.1	2.4	4.4	6.9	--
Eastern redcedar	12.6	--	6.3	3.2	--	3.1	--	--
Eastern redcedar-hardwood	85.1	5.4	5.7	27.3	24.3	16.6	5.8	--
Shortleaf pine-oak	65.1	--	--	29.8	14.0	11.0	7.7	2.6
Post-blackjack oak	723.8	18.1	123.4	210.7	224.5	92.8	54.3	--
Black-scarlet oak	910.3	44.7	79.4	318.0	231.0	189.5	47.7	--
White oak	287.5	--	31.7	77.6	105.5	61.9	7.2	3.6
Elm-ash-cottonwood	29.5	--	14.3	5.5	7.0	2.7	--	--
Maple-beech	13.7	--	--	7.0	6.7	--	--	--
Nonstocked 1/	166.0	14.9	58.0	70.7	18.7	3.7	--	--
All forest types	2,311.4	83.1	318.8	753.9	634.1	385.7	129.6	6.2

1/ See glossary for stand-size classes (page 3).

Table 12.--*Area of commercial forest land, by forest type, stand-size, and site class, Southwestern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type and stand-size class	All site classes	85 to 120 cu. ft.	50 to 85 cu. ft.	Less than 50 cu. ft.
Shortleaf pine				
Sawtimber	8.2	--	6.2	2.0
Poletimber	9.6	--	4.8	4.8
Sapling and seedling	--	--	--	--
All stands	17.8	--	11.0	6.8
Eastern redcedar				
Sawtimber	--	--	--	--
Poletimber	--	--	--	--
Sapling and seedling	12.6	--	--	12.6
All stands	12.6	--	--	12.6
Eastern redcedar-hardwood				
Sawtimber	9.0	--	--	9.0
Poletimber	14.1	--	3.5	10.6
Sapling and seedling	62.0	--	2.7	59.3
All stands	85.1	--	6.2	78.9
Shortleaf pine-oak				
Sawtimber	30.1	--	10.8	19.3
Poletimber	22.1	--	7.7	14.4
Sapling and seedling	12.9	--	6.5	6.4
All stands	65.1	--	25.0	40.1
Post-blackjack oak				
Sawtimber	177.1	--	35.6	141.5
Poletimber	258.9	3.8	77.2	177.9
Sapling and seedling	287.8	7.2	54.7	225.9
All stands	723.8	11.0	167.5	545.3
Black-scarlet oak				
Sawtimber	331.6	23.8	95.9	211.9
Poletimber	306.1	19.7	161.1	125.3
Sapling and seedling	272.6	14.6	65.9	192.1
All stands	910.3	58.1	322.9	529.3
White oak				
Sawtimber	128.9	3.6	29.5	95.8
Poletimber	116.4	--	20.2	96.2
Sapling and seedling	42.2	--	7.0	35.2
All stands	287.5	3.6	56.7	227.2
Elm-ash-cottonwood				
Sawtimber	13.7	--	8.2	5.5
Poletimber	7.0	--	7.0	--
Sapling and seedling	8.8	4.4	4.4	--
All stands	29.5	4.4	19.6	5.5
Maple-beech				
Sawtimber	6.7	--	6.7	--
Poletimber	7.0	--	--	7.0
Sapling and seedling	--	--	--	--
All stands	13.7	--	6.7	7.0
Nonstocked 1/	166.0	3.5	28.2	134.3
Total all types	2,311.4	80.6	643.8	1,587.0

1/ See glossary for stand-size classes (page 3).

Table 13.--*Area of commercial forest land, by stocking class based on selected stand components, Southwestern Ozarks, Missouri, 1972*

(Thousand acres)

Stocking percentage	Stocking classified in terms of					
	All trees	Growing-stock trees			Rough and rotten trees	Inhibiting vegetation
		Total	Desirable	Acceptable		
140+	18.2	--	--	--	--	--
130-139	18.1	--	--	--	--	--
120-129	155.0	2.4	--	2.4	--	--
110-119	344.6	11.2	--	4.1	--	--
100-109	420.1	28.2	--	23.2	3.6	--
90-99	565.5	32.8	--	32.8	60.3	--
80-89	358.3	67.3	--	50.0	124.0	--
70-79	255.3	137.2	--	128.7	189.8	--
60-69	122.3	224.8	--	204.6	368.1	--
50-59	41.8	324.8	--	307.3	426.2	--
40-49	12.2	400.0	--	438.0	465.1	--
30-39	--	425.9	--	456.2	367.3	--
20-29	--	372.5	15.7	364.8	191.3	--
10-19	--	211.2	41.4	222.6	92.8	--
0-9	--	73.1	2,254.3	76.7	22.9	2,311.4
Total	2,311.4	2,311.4	2,311.4	2,311.4	2,311.4	2,311.4

Table 14.--*Area of commercial forest land, by stocking class of growing-stock trees and stand-size class, Southwestern Ozarks, Missouri, 1972*

(Thousand acres)

Stocking percentage	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas 1/
101 to 133	41.9	11.7	13.9	16.3	--
61 to 100	462.1	161.2	182.7	118.2	--
17 to 60	1,622.6	532.4	533.4	556.8	--
Less than 17	184.8	--	11.2	7.6	166.0
All classes	2,311.4	705.3	741.2	698.9	166.0

1/ See glossary for stand-size classes (page 3).

Table 15.--*Area of noncommercial forest land, by ownership class, Southwestern Ozarks, Missouri, 1972*

(Thousand acres)

Ownership class	All areas	Productive reserved areas	Unproductive areas
National Forest	13.3	--	13.3
Other public	22.6	22.6	--
Farmer and miscellaneous private	96.0	--	96.0
All ownerships	131.9	22.6	109.3

Table 16.--*Area of noncommercial forest land, by forest type, Southwestern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type	All areas	Productive reserved areas	Unproductive areas
Shortleaf pine	.1	.1	--
Eastern redcedar	25.4	1.0	24.4
Eastern redcedar-hardwood	39.6	.3	39.3
Shortleaf pine-oak	.7	.7	--
Post-blackjack oak	53.1	7.5	45.6
Black-scarlet oak	9.5	9.5	--
White oak	3.0	3.0	--
Elm-ash-cottonwood	.5	.5	--
All forest types	131.9	22.6	109.3

Table 17.--*Number of all live trees on commercial forest land, by species and diameter class, Southwestern Ozarks, Missouri, 1972*

(Thousand trees)

Species	All classes	Diameter class (inches at breast height)													
		1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods:															
Shortleaf pine	32,982	14,127	8,824	4,601	2,669	1,592	836	282	20	24	7	--	--	--	--
Eastern redcedar	67,360	45,721	15,921	3,752	1,173	585	157	42	9	--	--	--	--	--	--
Total softwoods	100,342	59,848	24,745	8,353	3,842	2,177	993	324	29	24	7	--	--	--	--
Hardwoods:															
Select white oaks	143,131	80,414	25,741	14,810	8,208	5,563	3,746	2,465	1,191	429	227	119	199	19	--
Other white oaks	209,200	115,589	43,769	22,243	9,483	7,063	4,984	3,125	1,483	623	458	177	194	9	--
Select red oaks	22,698	10,441	4,706	2,062	1,870	1,467	796	664	264	127	118	65	109	9	--
Red oaks	279,985	174,139	47,514	20,659	14,722	9,384	5,972	3,489	1,972	825	554	352	339	63	1
Other red oaks	117,727	78,061	19,989	9,005	4,375	2,749	1,728	946	613	158	69	21	13	--	--
Hickory A	58,900	40,465	9,284	4,216	2,341	1,519	625	355	--	75	20	--	--	--	--
Hickory B	153,790	109,708	26,064	9,997	4,422	2,078	879	397	177	50	14	--	4	--	--
Hard maple	9,859	6,004	2,126	1,181	261	67	131	49	33	7	--	--	--	--	--
Soft maple	6,935	6,454	374	--	--	44	30	20	7	--	--	--	3	--	3
Sweetgum	6	--	--	--	--	--	--	--	--	--	6	--	--	--	--
Tupelo and blackgum	13,816	9,595	2,467	1,018	360	107	67	40	109	15	14	16	8	--	--
Ash	18,219	10,663	3,531	1,575	1,128	670	315	178	30	82	26	9	10	2	--
Sycamore	1,395	366	114	315	180	147	111	23	78	15	25	11	--	8	2
Basswood	802	724	--	--	--	73	--	--	--	--	--	--	--	5	--
Black walnut	12,038	4,145	3,926	1,554	1,358	541	283	158	30	25	14	--	4	--	--
Black cherry	1,535	710	217	254	130	145	70	--	--	--	5	--	4	--	--
Elm	48,848	33,870	9,791	3,286	1,098	417	248	62	28	27	7	10	4	--	--
Other hardwoods	166,841	140,984	21,531	2,842	889	324	141	61	52	13	--	4	--	--	--
Noncommercial species	42,956	37,517	4,497	862	80	--	--	--	--	--	--	--	--	--	--
Total hardwoods	1,308,681	859,849	225,641	95,879	50,905	32,358	20,126	12,032	6,067	2,471	1,557	784	891	115	6
All species	1,409,023	919,697	250,386	104,232	54,747	34,535	21,119	12,356	6,096	2,495	1,564	784	891	115	6

Table 18.--*Number of growing-stock trees on commercial forest land, by species and diameter class, Southwestern Ozarks, Missouri, 1972*

(Thousand trees)

Species	All classes	Diameter class (inches at breast height)												
		1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0+
Softwoods:														
Shortleaf pine	27,815	10,679	7,742	4,084	2,631	1,547	814	267	20	24	7	--	--	--
Eastern redcedar	52,936	36,684	13,064	2,357	627	103	101	--	--	--	--	--	--	--
Total softwoods	80,751	47,363	20,806	6,441	3,258	1,650	915	267	20	24	7	--	--	--
Hardwoods:														
Select white oaks	71,993	32,722	17,530	9,142	5,278	3,242	1,935	1,402	506	136	66	12	22	--
Other white oaks	79,038	33,834	20,651	12,258	5,269	3,043	2,190	1,131	519	98	39	6	--	--
Select red oaks	12,936	5,710	2,602	1,117	1,148	1,006	530	503	118	80	43	34	42	3
Red oaks	149,024	81,319	29,166	14,961	9,830	5,851	3,905	2,160	1,008	420	212	95	86	11
Other red oaks	25,286	15,256	5,159	2,964	823	489	277	181	108	17	7	--	5	--
Hickory A	21,885	12,633	4,596	2,069	1,149	791	324	260	--	50	13	--	--	--
Hickory B	58,306	33,752	14,571	5,571	2,326	1,186	526	219	136	12	7	--	--	--
Hard maple	4,036	1,474	1,728	628	98	--	74	13	21	--	--	--	--	--
Soft maple	2,325	2,318	--	--	--	--	--	--	7	--	--	--	--	--
Tupelo and blackgum	4,667	2,544	919	760	281	28	32	13	64	15	--	11	--	--
Ash	3,466	1,510	761	304	381	264	104	67	10	42	12	4	5	2
Sycamore	1,055	366	--	261	145	96	66	23	54	15	18	11	--	--
Basswood	403	350	--	--	--	53	--	--	--	--	--	--	--	--
Black walnut	4,056	354	1,642	844	591	301	173	97	22	18	14	--	--	--
Black cherry	503	353	108	--	--	24	14	--	--	--	--	--	4	--
Elm	8,757	3,745	3,384	847	544	137	52	25	--	18	--	5	--	--
Other hardwoods	14,932	11,406	2,791	402	124	70	81	26	27	5	--	--	--	--
Total hardwoods	462,668	239,646	105,608	52,128	27,987	16,581	10,283	6,120	2,600	926	431	178	164	16
All species	543,419	287,009	126,414	58,569	31,245	18,231	11,198	6,387	2,620	950	438	178	164	16

Table 19.--*Number of short-log trees on commercial forest land, by species and diameter class, Southwestern Ozarks, Missouri, 1972*

(Thousand trees)

Species	All classes	Diameter class (inches at breast height)								
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0+
Softwoods:										
Eastern redcedar	132	112	--	20	--	--	--	--	--	--
Total softwoods	132	112	--	20	--	--	--	--	--	--
Hardwoods:										
Select white oaks	1,595	--	630	496	272	123	44	--	24	6
Other white oaks	1,498	--	840	413	143	71	19	--	9	3
Select red oaks	133	--	87	12	11	--	7	10	6	--
Red oaks	1,222	--	428	297	344	58	14	37	39	5
Other red oaks	200	--	121	43	23	9	--	--	4	--
Hickory A	71	--	21	42	--	8	--	--	--	--
Hickory B	147	--	107	29	11	--	--	--	--	--
Hard maple	30	--	18	--	12	--	--	--	--	--
Soft maple	24	--	15	9	--	--	--	--	--	--
Tupelo and blackgum	18	--	--	14	--	--	--	--	4	--
Ash	103	--	55	48	--	--	--	--	--	--
Basswood	3	--	--	--	--	--	--	--	--	3
Black walnut	58	--	17	34	--	7	--	--	--	--
Elm	78	--	52	15	11	--	--	--	--	--
Other hardwoods	23	--	12	11	--	--	--	--	--	--
Total hardwoods	5,203	--	2,403	1,463	827	276	84	47	86	17
All species	5,335	112	2,403	1,483	827	276	84	47	86	17

Table 20.--*Net volume of growing stock and sawtimber on commercial forest land, by species, Southwestern Ozarks, Missouri, 1959 and 1972*

Species	Growing stock		Sawtimber	
	1959[1]	1972	1959[1]	1972
	Million cubic feet		Million board feet[2]	
Softwoods:				
Shortleaf pine	91.2	54.3	206.9	186.7
Eastern redcedar	5.3	9.5	15.3	10.5
Total softwoods	96.5	63.8	222.2	197.2
Hardwoods:				
Select white oaks	140.3	150.6	382.0	379.6
Other white oaks	214.1	138.9	535.0	297.7
Select red oaks	50.2	49.2	169.6	164.6
Red oaks	299.4	297.3	699.1	749.2
Other red oaks	11.9	22.6	27.1	48.6
Hickory A	53.9	28.1	28.2	53.4
Hickory B	43.3	46.3	48.6	71.0
Hard maple	3.2	3.9	3.0	8.4
Soft maple	--	.3	--	1.3
Tupelo and blackgum	3.8	6.0	15.5	13.7
Ash	8.0	10.8	26.7	25.9
Sycamore	2.4	8.1	5.1	26.0
Basswood	.1	.4	--	--
Black walnut	8.3	13.3	16.4	26.2
Black cherry	4.9	.7	1.9	2.7
Elm	11.9	6.9	27.9	10.1
Other hardwoods	5.7	3.9	8.5	9.6
Total hardwoods	861.4	787.3	1,994.6	1,888.0
All species	957.9	851.1	2,216.8	2,085.2

1/ Figures have been adjusted from those published previously for 1959 to conform to 1972 volumes because of changes in survey definitions and procedures.

2/ International 1/4-inch rule.

Table 21.--*Net volume on commercial forest land for Missouri's Southwestern Ozarks Survey Unit and for individual counties within Unit, by species and kind of material, 1972*

ALL COUNTIES

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Shortleaf pine	687.8	274.8	413.0	186.7	111.9	74.8	10.1
Eastern redcedar	120.2	95.3	24.9	10.5	1.7	8.8	81.7
Total softwoods	808.0	370.1	437.9	197.2	113.6	83.6	91.8
Hardwoods:							
Select white oaks	1,906.3	942.6	963.7	379.6	269.5	110.1	1,296.3
Other white oaks	1,758.2	999.5	758.7	297.7	193.1	104.6	1,690.3
Select red oaks	622.8	213.4	409.4	164.6	112.1	52.5	230.6
Red oaks	3,763.3	1,856.5	1,906.8	749.2	437.0	312.2	1,825.0
Other red oaks	286.2	169.2	117.0	48.6	29.5	19.1	779.2
Hickory A	355.7	215.7	140.0	53.4	21.8	31.6	215.9
Hickory B	585.6	398.2	187.4	71.0	34.7	36.3	309.6
Hard maple	48.9	22.8	26.1	8.4	7.0	1.4	37.8
Soft maple	3.3	--	3.3	1.3	1.3	--	16.5
Sweetgum	--	--	--	--	--	--	1.7
Tupelo and blackgum	75.6	38.4	37.2	13.7	9.0	4.7	36.2
Ash	137.1	65.0	72.1	25.9	19.4	6.5	130.9
Sycamore	102.8	33.5	69.3	26.0	16.9	9.1	23.5
Basswood	5.4	5.4	--	--	--	--	5.2
Black walnut	167.2	93.3	73.9	26.2	12.5	13.7	92.0
Black cherry	9.2	3.2	6.0	2.7	.9	1.8	30.5
Elm	87.3	61.6	25.7	10.1	5.5	4.6	122.7
Other hardwoods	50.0	23.1	26.9	9.6	7.1	2.5	93.4
Nomcommercial species	--	--	--	--	--	--	17.4
Total hardwoods	9,964.9	5,141.4	4,823.5	1,888.0	1,177.3	710.7	6,954.7
All species	10,772.9	5,511.5	5,261.4	2,085.2	1,290.9	794.3	7,046.5

BARRY COUNTY

Softwoods:							
Shortleaf pine	66.8	31.7	35.1	16.3	8.3	8.0	.7
Eastern redcedar	11.9	9.5	2.4	1.0	.3	.7	8.3
Total softwoods	78.7	41.2	37.5	17.3	8.6	8.7	9.0
Hardwoods							
Select white oaks	151.2	74.0	77.2	30.4	22.0	8.4	102.2
Other white oaks	136.9	77.5	59.4	23.4	14.9	8.5	128.1
Select red oaks	50.7	18.5	32.2	12.9	8.9	4.0	19.0
Red oaks	297.3	144.6	152.7	60.0	36.0	24.0	141.9
Other red oaks	21.8	12.9	8.9	3.7	2.2	1.5	57.7
Hickory A	27.8	17.0	10.8	4.1	1.7	2.4	16.8
Hickory B	45.1	30.6	14.5	5.5	2.7	2.8	23.6
Hard maple	3.7	1.7	2.0	.6	.5	.1	3.1
Soft maple	.2	--	.2	.1	.1	--	1.1
Sweetgum	--	--	--	--	--	--	.1
Tupelo and blackgum	5.9	3.1	2.8	1.0	.7	.3	2.7
Ash	11.0	5.0	6.0	2.1	1.6	.5	10.9
Sycamore	7.6	2.6	5.0	1.9	1.2	.7	1.7
Basswood	.4	.4	--	--	--	--	.3
Black walnut	13.1	7.4	5.7	2.0	1.0	1.0	6.6
Black cherry	.7	.2	.5	.2	.1	.1	2.1
Elm	7.1	5.3	1.8	.7	.3	.4	9.9
Other hardwoods	4.4	1.8	2.6	.9	.7	.2	7.0
Noncommercial species	--	--	--	--	--	--	1.3
Total hardwoods	784.9	402.6	382.3	149.5	94.6	54.9	536.1
All species	863.6	443.8	419.8	166.8	103.2	63.6	545.1

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

CHRISTIAN COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Shortleaf pine	39.7	15.7	24.0	10.8	6.4	4.4	.6
Eastern redcedar	7.8	6.2	1.6	.6	.1	.5	5.1
Total softwoods	47.5	21.9	25.6	11.4	6.5	4.9	5.7
Hardwoods							
Select white oaks	105.9	53.2	52.7	20.8	14.6	6.2	72.5
Other white oaks	94.7	54.3	40.4	15.8	9.9	5.9	91.0
Select red oaks	33.8	12.1	21.7	8.8	5.8	3.0	12.6
Red oaks	203.6	101.9	101.7	39.9	22.6	17.3	98.6
Other red oaks	15.3	9.1	6.2	2.6	1.5	1.1	41.6
Hickory A	19.8	12.1	7.7	3.0	1.2	1.8	11.9
Hickory B	31.9	21.8	10.1	3.8	1.8	2.0	16.9
Hard maple	2.7	1.3	1.4	.5	.4	.1	2.2
Soft maple	.4	--	.4	.1	.1	--	1.5
Sweetgum	--	--	--	--	--	--	.1
Tupelo and blackgum	4.1	2.1	2.0	.7	.5	.2	1.9
Ash	8.5	4.1	4.4	1.6	1.2	.4	8.1
Sycamore	6.9	2.1	4.8	1.8	1.2	.6	1.8
Basswood	.3	.3	--	--	--	--	.3
Black walnut	9.4	5.4	4.0	1.4	.6	.8	5.0
Black cherry	.6	.2	.4	.2	.1	.1	1.8
Elm	4.9	3.5	1.4	.5	.3	.2	7.3
Other hardwoods	3.0	1.4	1.6	.6	.4	.2	5.7
Noncommercial species	--	--	--	--	--	--	1.0
Total hardwoods	545.8	284.9	260.9	102.1	62.2	39.9	381.8
All species	593.3	306.8	286.5	113.5	68.7	44.8	387.5

DOUGLAS COUNTY

Softwoods:							
Shortleaf pine	96.8	37.6	59.2	26.5	16.2	10.3	1.3
Eastern redcedar	8.8	6.7	2.1	.9	--	.9	5.8
Total softwoods	105.6	44.3	61.3	27.4	16.2	11.2	7.1
Hardwoods:							
Select white oaks	202.8	100.0	102.8	40.5	28.6	11.9	136.8
Other white oaks	184.2	105.0	79.2	31.1	20.3	10.8	180.8
Select red oaks	65.8	23.2	42.6	17.1	11.5	5.6	23.5
Red oaks	399.6	197.7	201.9	79.4	46.2	33.2	194.2
Other red oaks	30.3	18.0	12.3	5.1	3.1	2.0	84.7
Hickory A	37.9	23.1	14.8	5.6	2.3	3.3	23.0
Hickory B	61.9	41.7	20.2	7.6	3.7	3.9	33.5
Hard maple	5.3	2.5	2.8	.9	.7	.2	3.8
Soft maple	.3	--	.3	.1	.1	--	1.6
Sweetgum	--	--	--	--	--	--	.2
Tupelo and blackgum	8.2	4.3	3.9	1.5	1.0	.5	3.9
Ash	13.6	6.7	6.9	2.5	1.9	.6	12.4
Sycamore	10.4	3.4	7.0	2.6	1.7	.9	2.3
Basswood	.6	.6	--	--	--	--	.6
Black walnut	17.2	9.6	7.6	2.7	1.3	1.4	10.6
Black cherry	.9	.3	.6	.3	.1	.2	2.9
Elm	8.6	5.7	2.9	1.1	.6	.5	12.1
Other hardwoods	4.6	2.4	2.2	.9	.6	.3	9.6
Noncommercial species	--	--	--	--	--	--	1.9
Total hardwoods	1,052.2	544.2	508.0	199.0	123.7	75.3	738.4
All species	1,157.8	588.5	569.3	226.4	139.9	86.5	745.5

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
HOWELL COUNTY							
Softwoods:							
Shortleaf pine	94.7	39.9	54.8	24.8	15.3	9.5	1.3
Eastern redcedar	9.6	7.5	2.1	.9	--	.9	5.8
Total softwoods	104.3	47.4	56.9	25.7	15.3	10.4	7.1
Hardwoods							
Select white oaks	228.6	109.7	118.9	46.9	34.5	12.4	152.5
Other white oaks	212.1	118.8	93.3	36.7	25.2	11.5	200.9
Select red oaks	76.1	24.5	51.6	20.7	14.8	5.9	26.6
Red oaks	461.3	218.2	243.1	95.6	60.1	35.5	223.0
Other red oaks	34.5	20.0	14.5	6.0	3.8	2.2	93.1
Hickory A	42.5	25.5	17.0	6.4	2.8	3.6	26.1
Hickory B	69.2	46.2	23.0	8.7	4.5	4.2	37.3
Hard maple	5.9	2.6	3.3	1.1	.9	.2	4.3
Soft maple	.2	--	.2	.1	.1	--	1.2
Sweetgum	--	--	--	--	--	--	.2
Tupelo and blackgum	9.3	4.8	4.5	1.7	1.2	.5	4.5
Ash	14.8	6.8	8.0	2.9	2.3	.6	13.0
Sycamore	9.8	3.1	6.7	2.5	1.8	.7	2.0
Basswood	.6	.6	--	--	--	--	.5
Black walnut	18.5	9.9	8.6	3.1	1.6	1.5	10.8
Black cherry	.9	.3	.6	.3	.1	.2	3.3
Elm	9.6	6.4	3.2	1.3	.7	.6	13.0
Other hardwood	5.0	2.4	2.6	.9	.7	.2	10.2
Noncommercial species	--	--	--	--	--	--	2.0
Total hardwoods	1,198.9	599.8	599.1	234.9	155.1	79.8	824.5
All species	1,303.2	647.2	656.0	260.6	170.4	90.2	831.6
MC DONALD COUNTY							
Softwoods:							
Shortleaf pine	33.1	12.7	20.4	9.3	5.4	3.9	.6
Eastern redcedar	6.0	4.7	1.3	.6	--	.6	3.3
Total softwoods	39.1	17.4	21.7	9.9	5.4	4.5	3.9
Hardwoods							
Select white oaks	146.8	72.3	74.5	29.3	21.0	8.3	95.5
Other white oaks	137.1	78.8	58.3	22.9	15.5	7.4	126.5
Select red oaks	48.0	15.4	32.6	13.1	9.0	4.1	16.8
Red oaks	298.8	147.8	151.0	59.4	34.7	24.7	141.1
Other red oaks	22.9	13.5	9.4	3.9	2.4	1.5	59.4
Hickory A	28.0	16.8	11.2	4.3	1.7	2.6	16.3
Hickory B	45.7	31.1	14.6	5.6	2.8	2.8	23.2
Hard maple	3.7	1.7	2.0	.6	.5	.1	2.8
Soft maple	.2	--	.2	.1	.1	--	1.1
Sweetgum	--	--	--	--	--	--	.2
Tupelo and blackgum	5.9	3.0	2.9	1.1	.7	.4	2.8
Ash	10.0	4.8	5.2	1.9	1.5	.4	8.7
Sycamore	8.0	2.6	5.4	2.0	1.2	.8	1.6
Basswood	.4	.4	--	--	--	--	.4
Black walnut	12.3	6.5	5.8	2.1	1.0	1.1	6.7
Black cherry	.7	.3	.4	.2	.1	.1	2.2
Elm	6.2	4.2	2.0	.8	.4	.4	8.3
Other hardwoods	3.4	1.7	1.7	.6	.4	.2	6.8
Noncommercial species	--	--	--	--	--	--	1.2
Total hardwoods	778.1	400.9	377.2	147.9	93.0	54.9	521.6
All species	817.2	418.3	398.9	157.8	98.4	59.4	525.5

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
NEWTON COUNTY							
Softwoods:							
Shortleaf pine	19.9	7.8	12.1	5.6	3.3	2.3	.4
Eastern redcedar	4.3	3.5	.8	.3	--	.3	2.2
Total softwoods	24.2	11.3	12.9	5.9	3.3	2.6	2.6
Hardwoods:							
Select white oaks	89.9	43.9	46.0	18.1	13.5	4.6	59.9
Other white oaks	82.1	46.0	36.1	14.2	9.9	4.3	77.7
Select red oaks	28.9	8.8	20.1	8.0	5.8	2.2	10.1
Red oaks	175.5	83.8	91.7	36.0	22.4	13.6	86.0
Other red oaks	13.5	7.7	5.8	2.4	1.6	.8	36.3
Hickory A	16.8	10.0	6.8	2.6	1.2	1.4	10.1
Hickory B	26.7	17.8	8.9	3.4	1.8	1.6	14.5
Hard maple	2.2	1.0	1.2	.4	.4	--	1.7
Soft maple	.2	--	.2	.1	.1	--	1.0
Sweetgum	--	--	--	--	--	--	.1
Tupelo and blackgum	3.5	1.7	1.8	.6	.4	.2	1.7
Ash	6.5	3.0	3.5	1.3	1.0	.3	5.5
Sycamore	4.8	1.3	3.5	1.3	.9	.4	1.2
Basswood	.2	.2	--	--	--	--	.2
Black walnut	7.4	3.9	3.5	1.3	.6	.7	4.1
Black cherry	.4	.1	.3	.1	--	.1	2.0
Elm	3.8	2.6	1.2	.5	.3	.2	6.1
Other hardwoods	2.2	1.2	1.0	.4	.3	.1	5.1
Noncommercial species	--	--	--	--	--	--	.9
Total hardwoods	464.6	233.0	231.6	90.7	60.2	30.5	324.2
All species	488.8	244.3	244.5	96.6	63.5	33.1	326.8
OZARK COUNTY							
Softwoods:							
Shortleaf pine	60.1	24.3	35.8	16.4	9.6	6.8	1.0
Eastern redcedar	13.6	10.3	3.3	1.4	.5	.9	9.9
Total softwoods	73.7	34.6	39.1	17.8	10.1	7.7	10.9
Hardwoods:							
Select white oaks	197.6	96.3	101.3	39.9	29.0	10.9	133.1
Other white oaks	178.9	100.5	78.4	30.8	20.5	10.3	172.6
Select red oaks	64.2	21.1	43.1	17.3	12.2	5.1	25.3
Red oaks	381.9	185.5	196.4	77.1	46.4	30.7	186.4
Other red oaks	29.0	17.0	12.0	5.0	3.1	1.9	79.6
Hickory A	36.5	22.1	14.4	5.5	2.4	3.1	22.1
Hickory B	59.0	40.0	19.0	7.2	3.7	3.5	31.1
Hard maple	4.8	2.1	2.7	.9	.8	.1	3.9
Soft maple	.5	--	.5	.2	.2	--	2.1
Sweetgum	--	--	--	--	--	--	.2
Tupelo and blackgum	7.6	3.8	3.8	1.4	.9	.5	3.8
Ash	15.4	7.2	8.2	3.0	2.3	.7	14.9
Sycamore	12.1	3.8	8.3	3.1	2.0	1.1	3.0
Basswood	.5	.5	--	--	--	--	.6
Black walnut	18.0	10.2	7.8	2.8	1.4	1.4	9.0
Black cherry	1.0	.3	.7	.3	.1	.2	2.8
Elm	8.9	6.4	2.5	1.0	.6	.4	12.4
Other hardwoods	6.2	2.3	3.9	1.3	1.0	.3	9.5
Noncommercial species	--	--	--	--	--	--	1.8
Total hardwoods	1,022.1	519.1	503.0	196.8	126.6	70.2	714.2
All species	1,095.8	553.7	542.1	214.6	136.7	77.9	725.1

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

STONE COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Shortleaf pine	26.6	10.7	15.9	7.3	4.1	3.2	.5
Eastern redcedar	9.6	8.2	1.4	.6	.1	.5	6.1
Total softwoods	36.2	18.9	17.3	7.9	4.2	3.7	6.6
Hardwoods:							
Select white oaks	101.6	51.7	49.9	19.6	13.6	6.0	70.8
Other white oaks	93.6	53.3	40.3	15.7	9.6	6.1	88.2
Select red oaks	33.5	12.3	21.2	8.6	5.7	2.9	12.5
Red oaks	196.9	98.8	98.1	38.5	21.7	16.8	94.2
Other red oaks	14.9	8.9	6.0	2.5	1.5	1.0	40.2
Hickory A	18.6	11.3	7.3	2.8	1.1	1.7	11.1
Hickory B	31.3	21.7	9.6	3.6	1.8	1.8	16.5
Hard maple	2.5	1.2	1.3	.4	.3	.1	2.2
Soft maple	.2	--	.2	.1	.1	--	1.1
Sweetgum	--	--	--	--	--	--	.1
Tupelo and blackgum	4.1	2.0	2.1	.8	.5	.3	1.9
Ash	8.1	3.6	4.5	1.5	1.0	.5	8.1
Sycamore	5.9	1.9	4.0	1.5	1.0	.5	1.5
Basswood	.3	.3	--	--	--	--	.3
Black walnut	9.5	5.4	4.1	1.4	.6	.8	4.6
Black cherry	.5	.2	.3	.2	.1	.1	1.8
Elm	5.5	4.2	1.3	.5	.3	.2	7.6
Other hardwoods	2.8	1.3	1.5	.5	.4	.1	5.2
Noncommercial species	--	--	--	--	--	--	.9
Total hardwoods	529.8	278.1	251.7	98.2	59.3	38.9	368.8
All species	566.0	297.0	269.0	106.1	63.5	42.6	375.4

TANEY COUNTY

Softwoods:							
Shortleaf pine	29.3	11.6	17.7	8.1	3.6	4.5	.7
Eastern redcedar	23.2	18.7	4.5	1.9	.7	1.2	19.3
Total softwoods	52.5	30.3	22.2	10.0	4.3	5.7	20.0
Hardwoods:							
Select white oaks	133.0	66.9	66.1	25.9	17.2	8.7	107.3
Other white oaks	132.1	73.2	58.9	22.8	12.4	10.4	141.5
Select red oaks	45.4	17.7	27.7	11.2	7.3	3.9	21.3
Red oaks	246.9	125.8	121.1	47.2	24.2	23.0	133.2
Other red oaks	20.0	12.0	8.0	3.4	1.9	1.5	61.3
Hickory A	24.4	15.0	9.4	3.6	1.3	2.3	16.5
Hickory B	44.4	31.3	13.1	5.0	2.2	2.8	24.2
Hard maple	3.7	1.8	1.9	.6	.5	.1	3.5
Soft maple	.1	--	.1	--	--	--	1.1
Sweetgum	--	--	--	--	--	--	.1
Tupelo and blackgum	5.2	2.4	2.8	1.0	.6	.4	2.5
Ash	11.7	5.3	6.4	2.1	1.3	.8	15.6
Sycamore	6.8	2.7	4.1	1.5	1.1	.4	1.7
Basswood	.5	.5	--	--	--	--	.3
Black walnut	15.0	9.4	5.6	1.9	1.0	.9	7.6
Black cherry	.6	.2	.4	.2	--	.2	2.2
Elm	9.4	7.5	1.9	.7	.4	.3	12.4
Other hardwoods	5.7	2.0	3.7	1.2	1.0	.2	6.7
Noncommercial species	--	--	--	--	--	--	1.4
Total hardwoods	704.9	373.7	331.2	128.3	72.4	55.9	560.4
All species	757.4	404.0	353.4	138.3	76.7	61.6	580.4

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet 1/			Thousand cords
TEXAS COUNTY							
Softwoods:							
Shortleaf pine	162.9	60.2	102.7	45.4	30.5	14.9	2.0
Eastern redcedar	13.1	10.1	3.0	1.3	--	1.3	9.1
Total softwoods	176.0	70.3	105.7	46.7	30.5	16.2	11.1
Hardwoods:							
Select white oaks	310.3	155.5	154.8	61.1	42.1	19.0	207.4
Other white oaks	287.7	167.2	120.5	47.4	30.5	16.9	273.8
Select red oaks	100.2	35.3	64.9	26.1	16.9	9.2	35.9
Red oaks	630.4	317.8	312.6	123.1	69.1	54.0	299.0
Other red oaks	47.5	28.7	18.8	7.8	4.6	3.2	127.4
Hickory A	58.4	35.6	22.8	8.7	3.3	5.4	35.1
Hickory B	97.0	66.2	30.8	11.7	5.4	6.3	50.2
Hard maple	8.0	3.9	4.1	1.3	1.1	.2	5.7
Soft maple	.3	--	.3	.1	.1	--	1.8
Sweetgum	--	--	--	--	--	--	.2
Tupelo and blackgum	12.6	6.6	6.0	2.2	1.4	.8	6.0
Ash	19.7	9.8	9.9	3.6	2.7	.9	18.1
Sycamore	15.2	5.4	9.8	3.7	2.2	1.5	3.0
Basswood	.9	.9	--	--	--	--	.8
Black walnut	26.0	14.3	11.7	4.2	1.9	2.3	15.4
Black cherry	1.5	.6	.9	.4	.1	.3	4.4
Elm	13.0	8.7	4.3	1.7	.9	.8	17.8
Other hardwoods	6.9	3.5	3.4	1.2	.8	.4	14.1
Noncommercial species	--	--	--	--	--	--	2.6
Total hardwoods	1,635.6	860.0	775.6	304.3	183.1	121.2	1,118.7
All species	1,811.6	930.3	881.3	351.0	213.6	137.4	1,129.8
WEBSTER COUNTY							
Softwoods:							
Shortleaf pine	23.5	9.1	14.4	6.6	3.9	2.7	.4
Eastern redcedar	5.3	4.3	1.0	.4	--	.4	2.6
Total softwoods	28.8	13.4	15.4	7.0	3.9	3.1	3.0
Hardwoods:							
Select white oaks	105.1	51.6	53.5	21.1	15.4	5.7	69.0
Other white oaks	96.1	54.1	42.0	16.5	11.3	5.2	89.9
Select red oaks	33.9	10.5	23.4	9.4	6.7	2.7	11.7
Red oaks	207.5	100.1	107.4	42.2	25.8	16.4	100.2
Other red oaks	15.9	9.1	6.8	2.8	1.8	1.0	41.8
Hickory A	19.6	11.7	7.9	3.0	1.3	1.7	11.7
Hickory B	31.5	21.1	10.4	3.9	2.0	1.9	16.5
Hard maple	2.7	1.2	1.5	.5	.4	.1	2.0
Soft maple	.2	--	.2	.1	.1	--	.9
Sweetgum	--	--	--	--	--	--	.1
Tupelo and blackgum	4.0	2.0	2.0	.7	.5	.2	2.0
Ash	7.3	3.4	3.9	1.4	1.1	.3	6.4
Sycamore	5.6	1.7	3.9	1.5	1.0	.5	1.2
Basswood	.3	.3	--	--	--	--	.3
Black walnut	8.7	4.6	4.1	1.4	.7	.7	4.6
Black cherry	.5	.2	.3	.1	--	.1	2.1
Elm	4.4	3.1	1.3	.5	.3	.2	6.6
Other hardwoods	2.5	1.3	1.2	.5	.4	.1	5.5
Noncommercial species	--	--	--	--	--	--	1.0
Total hardwoods	545.8	276.0	269.8	105.6	68.8	36.8	373.5
All species	574.6	289.4	285.2	112.6	72.7	39.9	376.5

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

WRIGHT COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Shortleaf pine	34.4	13.5	20.9	9.6	5.3	4.3	.6
Eastern redcedar	7.0	5.6	1.4	.6	--	.6	4.2
Total softwoods	41.4	19.1	22.3	10.2	5.3	4.9	4.8
Hardwoods:							
Select white oaks	133.5	67.5	66.0	26.0	18.0	8.0	89.3
Other white oaks	122.7	70.8	51.9	20.4	13.1	7.3	119.3
Select red oaks	42.3	14.0	28.3	11.4	7.5	3.9	15.3
Red oaks	263.6	134.5	129.1	50.8	27.8	23.0	127.2
Other red oaks	20.6	12.3	8.3	3.4	2.0	1.4	56.1
Hickory A	25.4	15.5	9.9	3.8	1.5	2.3	15.2
Hickory B	41.9	28.7	13.2	5.0	2.3	2.7	22.1
Hard maple	3.7	1.8	1.9	.6	.5	.1	2.6
Soft maple	.5	--	.5	.2	.2	--	2.0
Sweetgum	--	--	--	--	--	--	.1
Tupelo and blackgum	5.2	2.6	2.6	1.0	.6	.4	2.5
Ash	10.5	5.3	5.2	2.0	1.5	.5	9.2
Sycamore	9.7	2.9	6.8	2.6	1.6	1.0	2.5
Basswood	.4	.4	--	--	--	--	.6
Black walnut	12.1	6.7	5.4	1.9	.8	1.1	7.0
Black cherry	.9	.3	.6	.2	.1	.1	2.9
Elm	5.9	4.0	1.9	.8	.4	.4	9.2
Other hardwoods	3.3	1.8	1.5	.6	.4	.2	8.0
Noncommercial species	--	--	--	--	--	--	1.4
Total hardwoods	702.2	369.1	333.1	130.7	78.3	52.4	492.5
All species	743.6	388.2	355.4	140.9	83.6	57.3	497.3

1/ International 1/4-inch rule.

Table 22.--*Net volume of timber on commercial forest land, by class of timber and softwoods and hardwoods, Southwestern Ozarks, Missouri, 1972*

(Million cubic feet)

Class of timber	All species	Softwoods	Hardwoods
Growing stock trees:			
Saw log trees:			
Saw log portion	297.5	27.6	269.9
Upper stem portion	118.2	7.0	111.2
Total sawtimber	415.7	34.6	381.1
Poletimber trees	435.4	29.2	406.2
Total growing stock	851.1	63.8	787.3
Cull trees:			
Rough cull trees:			
Sawtimber	153.0	2.8	150.2
Poletimber	236.4	3.3	233.1
Total rough cull	389.4	6.1	383.3
Short log cull trees:			
Sawtimber	82.2	.9	81.3
Poletimber	--	--	--
Total short log	82.2	.9	81.3
Rotten cull trees:			
Sawtimber	59.0	.1	58.9
Poletimber	26.1	.2	25.9
Total rotten cull	85.1	.3	84.8
Total cull	556.7	7.3	549.4
Salvable dead trees:			
Sawtimber	20.5	3.3	17.2
Poletimber	9.8	1.2	8.6
Total salvable dead	30.3	4.5	25.8
All classes	1,438.1	75.6	1,362.5

Table 23.--*Net volume of growing stock, sawtimber, and rough and rotten trees on commercial forest land, by individual species, Southwestern Ozarks, Missouri, 1972*

Species	Growing stock	Sawtimber	Rough and rotten trees
	Million cubic feet	Million board feet[1/]	Million cubic feet
Softwoods:			
Shortleaf pine	54.3	186.7	0.8
Eastern redcedar	9.5	10.5	6.5
Total softwoods	63.8	197.2	7.3
Hardwoods:			
Select white oak group			
Bur oak	--	.1	--
Chinkapin oak	5.9	8.6	14.0
White oak	143.7	369.5	88.3
Swamp chestnut oak	.5	--	--
Swamp white oak	.5	1.4	.1
Other white oak group			
Post oak	138.9	297.7	133.5
Select red oak group			
Northern red oak	48.7	162.2	17.8
Shumard oak	.5	2.4	.4
Red oak group			
Black oak	285.1	720.2	138.7
Scarlet oak	12.2	29.0	5.5
Other red oak group			
Blackjack oak	22.2	47.4	61.5
Water oak	.3	1.2	--
Willow oak	.1	--	--
Hickory A group			
Mockernut hickory	25.2	49.4	15.5
Shagbark hickory	2.4	2.9	1.5
Shellbark hickory	.5	1.1	.1
Hickory B group			
Bitternut hickory	2.0	1.4	1.0
Pignut hickory	36.3	58.4	20.7
Black hickory	8.0	11.2	2.7
Hard maple group			
Sugar maple	3.9	8.4	3.0
Soft maple group			
Silver maple	.3	1.3	1.3
Sweetgum	--	--	.1
Tupelo and blackgum group			
Blackgum	6.0	13.7	2.9
Ash group			
Blue ash	--	--	.1
Green ash	3.1	7.5	1.8
White ash	7.7	18.4	8.4
Sycamore group			
American sycamore	8.1	26.0	1.9
Basswood group			
American basswood	.4	--	.4
Black walnut	13.3	26.2	7.3
Black cherry	.7	2.7	2.4
Elm group			
American elm	3.3	7.3	5.6
Rock elm	1.2	.7	.9
Slippery elm	1.7	2.1	2.4
Winged elm	.7	--	.8
Other hardwoods			
Black locust	--	--	.4
Boxelder	--	--	.3
Butternut	.4	1.0	.5
Common persimmon	.5	--	.8
Cucumber tree	.2	1.0	--
Flowering dogwood	--	--	1.6
Hackberry	2.0	6.2	1.0
Honeylocust	.5	1.4	.2
Ohio buckeye	.1	--	--
Osage orange	--	--	.3
Red mulberry	--	--	.6
Sassafras	.2	--	1.7
Noncommercial	--	--	1.4
Total hardwoods	787.3	1,888.0	549.4
All species	851.1	2,085.2	556.7

1/ International 1/4-inch rule.

(Table 23 continued in next column)

Table 24.--*Net volume of growing stock and sawtimber on commercial forest land, by ownership class and species group, Southwestern Ozarks, Missouri, 1972*

GROWING STOCK

Ownership class	All species	Shortleaf pine	Other softwoods	Soft hardwoods	Hard hardwoods
		Thousand cords			
National Forest	1,820.8	322.6	41.2	33.2	1,423.8
Other federal	14.4	--	--	--	14.4
State, county and municipal	36.9	--	--	--	36.9
Forest industry	184.8	20.4	4.9	15.2	144.3
Farmer and miscellaneous private	8,716.0	344.8	74.1	269.8	8,027.3
All ownerships	10,772.9	687.8	120.2	318.2	9,646.7
SAWTIMBER					
		Million board feet[1/]			
National Forest	395.0	109.2	6.2	5.4	274.2
Other federal	3.1	--	--	--	3.1
State, county and municipal	10.0	--	--	--	10.0
Forest industry	35.3	1.6	.2	1.2	32.3
Farmer and miscellaneous private	1,641.8	75.9	4.1	55.3	1,506.5
All ownerships	2,085.2	186.7	10.5	61.9	1,826.1

1/ International 1/4-inch rule.

Table 25.--*Net volume of growing stock on commercial forest land, by species and diameter class, Southwestern Ozarks, Missouri, 1972*

(Thousand cords)

Species	All classes	Diameter class (inches at breast height)											
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods:													
Shortleaf pine	687.8	119.0	155.8	177.3	144.5	67.0	6.8	13.2	4.2	--	--	--	--
Eastern redcedar	120.2	62.1	33.2	10.8	14.1	--	--	--	--	--	--	--	--
Total softwoods	808.0	181.1	189.0	188.1	158.6	67.0	6.8	13.2	4.2	--	--	--	--
Hardwoods:													
Select white oaks	1,906.3	271.7	321.9	349.0	346.5	340.3	166.1	57.4	31.0	6.9	15.5	--	--
Other white oaks	1,758.2	386.7	311.9	301.1	322.1	230.4	145.1	37.2	20.0	3.7	--	--	--
Select red oaks	622.8	37.8	67.8	107.9	88.6	124.7	44.7	30.8	29.2	35.8	47.5	8.0	--
Red oaks	3,763.3	549.7	665.6	641.5	660.3	505.9	311.6	177.6	106.9	58.7	71.3	14.2	--
Other red oaks	286.2	82.2	42.5	44.6	39.7	36.0	31.0	6.8	2.1	--	1.3	--	--
Hickory A	355.7	65.2	69.0	81.7	51.4	59.5	--	22.2	6.7	--	--	--	--
Hickory B	585.6	143.5	133.5	121.1	79.1	51.7	47.4	4.4	4.9	--	--	--	--
Hard maple	48.9	16.1	6.5	--	13.7	3.3	9.3	--	--	--	--	--	--
Soft maple	3.3	--	--	--	--	--	3.3	--	--	--	--	--	--
Tupelo and blackgum	75.6	19.3	16.0	2.9	5.7	2.6	18.7	5.2	--	5.2	--	--	--
Ash	137.1	12.5	27.1	25.3	17.9	15.8	5.0	16.2	7.0	1.4	4.3	4.6	--
Sycamore	102.8	10.6	10.1	12.7	13.4	6.6	19.5	9.1	12.6	8.2	--	--	--
Basswood	5.4	--	--	5.4	--	--	--	--	--	--	--	--	--
Black walnut	167.2	24.3	36.7	32.3	28.3	23.4	6.8	8.3	7.1	--	--	--	--
Black cherry	9.2	--	--	3.2	1.9	--	--	--	--	--	4.1	--	--
Elm	87.3	23.1	25.3	13.1	8.8	5.4	--	8.0	--	3.6	--	--	--
Other hardwoods	50.0	10.9	6.9	5.2	11.6	5.8	8.3	1.3	--	--	--	--	--
Total hardwoods	9,964.9	1,653.6	1,740.8	1,747.0	1,689.0	1,411.4	816.8	384.5	227.5	123.5	144.0	26.8	--
All species	10,772.9	1,834.7	1,929.8	1,935.1	1,847.6	1,478.4	823.6	397.7	231.7	123.5	144.0	26.8	--

Table 26.--*Net volume of sawtimber on commercial forest land, by species and diameter class, Southwestern Ozarks, Missouri, 1972*

(Million board feet)[1/]

Species	All classes	Diameter class (inches at breast height)								
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9
Softwoods:										
Shortleaf pine	186.7	79.0	63.9	33.2	2.9	5.5	2.2	--	--	--
Eastern redcedar	10.5	4.5	6.0	--	--	--	--	--	--	--
Total softwoods	197.2	83.5	69.9	33.2	2.9	5.5	2.2	--	--	--
Hardwoods:										
Select white oaks	379.6	--	132.1	136.3	65.8	23.7	12.4	2.8	6.5	--
Other white oaks	297.7	--	126.1	92.3	55.6	14.2	8.0	1.5	--	--
Select red oaks	164.6	--	36.8	53.5	18.4	13.1	10.6	12.6	17.0	2.6
Red oaks	749.2	--	258.8	199.8	126.0	67.9	43.8	21.0	26.4	5.5
Other red oaks	48.6	--	16.8	15.0	12.6	2.3	.9	--	1.0	--
Hickory A	53.4	--	19.1	24.4	--	7.9	2.0	--	--	--
Hickory B	71.0	--	29.6	19.9	18.4	1.7	1.4	--	--	--
Hard maple	8.4	--	4.5	1.0	2.9	--	--	--	--	--
Soft maple	1.3	--	--	--	1.3	--	--	--	--	--
Tupelo and blackgum	13.7	--	1.6	.8	6.7	2.0	--	2.6	--	--
Ash	25.9	--	5.6	5.1	1.8	5.9	2.8	.6	2.2	1.9
Sycamore	26.0	--	4.3	2.6	6.5	3.3	5.8	3.5	--	--
Black walnut	26.2	--	10.0	7.8	2.4	3.3	2.7	--	--	--
Black cherry	2.7	--	.8	--	--	--	--	--	1.9	--
Elm	10.1	--	3.3	2.0	--	3.5	--	1.3	--	--
Other hardwoods	9.6	--	4.1	2.2	2.8	.5	--	--	--	--
Total hardwoods	1,888.0	--	653.5	562.7	321.2	149.3	90.4	45.9	55.0	10.0
All species	2,085.2	83.5	723.4	595.9	324.1	154.8	92.6	45.9	55.0	10.0

1/ International 1/4-inch rule.

Table 27.--*Net volume of growing stock on commercial forest land, by species and forest type, Southwestern Ozarks, Missouri, 1972*

(Million cubic feet)

Species	All forest types	Shortleaf pine	Eastern redcedar	Eastern redcedar-hardwood	Shortleaf pine-oak	Post-blackjack oak	Black-scarlet oak	White oak	Elm-ash-cottonwood	Maple-beech	Non-stocked
Softwoods:											
Shortleaf pine	54.3	13.5	--	.2	22.4	3.1	9.2	5.3	.3	--	.3
Eastern redcedar	9.5	--	.2	4.3	--	1.6	1.2	1.1	.5	--	.6
Total softwoods	63.8	13.5	.2	4.5	22.4	4.7	10.4	6.4	.8	--	.9
Hardwoods:											
Select white oaks	150.6	.2	.1	2.3	4.9	13.5	60.4	64.9	2.9	.6	.8
Other white oaks	138.9	.4	.1	3.0	2.4	90.5	33.6	5.9	.2	.5	2.3
Select red oaks	49.2	.2	--	1.8	1.9	1.9	36.2	5.3	.2	1.7	--
Red oaks	297.3	1.1	--	1.7	7.9	50.2	208.2	23.9	1.3	.2	2.8
Other red oaks	22.6	--	--	--	.3	14.4	7.5	.4	--	--	--
Hickory A	28.1	--	--	.2	.5	7.4	13.9	5.4	.7	--	--
Hickory B	46.3	--	--	.9	.5	19.9	17.5	6.5	--	.5	.5
Hard maple	3.9	--	--	--	--	.5	1.9	.8	--	.7	--
Soft maple	.3	--	--	--	--	--	--	--	.3	--	--
Tupelo and blackgum	6.0	--	--	--	.2	.3	2.8	2.7	--	--	--
Ash	10.8	--	.1	.6	--	1.3	4.5	2.7	1.3	.3	--
Sycamore	8.1	--	--	.1	--	.2	2.2	2.1	3.5	--	--
Basswood	.4	--	--	--	--	--	--	.2	--	.2	--
Black walnut	13.3	--	--	.8	--	.4	6.8	3.4	.6	1.1	.2
Black cherry	.7	--	--	--	--	.2	--	.3	.2	--	--
Elm	6.9	--	--	.9	--	1.7	2.4	1.3	--	.4	.2
Other hardwoods	3.9	--	--	.8	--	.3	.6	1.5	.4	--	.3
Total hardwoods	787.3	1.9	.3	13.1	18.6	202.7	398.5	127.3	11.6	6.2	7.1
All species	851.1	15.4	.5	17.6	41.0	207.4	408.9	133.7	12.4	6.2	8.0

Table 28.--*Net volume of sawtimber on commercial forest land, by species and forest type, Southwestern Ozarks, Missouri, 1972*

(Million board feet)[1/]

Species	All forest types	Shortleaf pine	Eastern redcedar-hardwood	Shortleaf pine-oak	Post-blackjack oak	Black-scarlet oak	White oak	Elm-ash-cottonwood	Maple-beech	Non-stocked
Softwoods:										
Shortleaf pine	186.7	40.2	1.4	82.5	9.0	33.4	17.2	1.6	--	1.4
Eastern redcedar	10.5	--	2.8	--	1.5	3.9	1.4	--	--	.9
Total softwoods	197.2	40.2	4.2	82.5	10.5	37.3	18.6	1.6	--	2.3
Hardwoods:										
Select white oaks	379.6	.7	2.4	13.5	38.1	161.1	153.1	4.1	3.0	3.6
Other white oaks	297.7	.6	9.6	3.1	181.8	77.6	18.6	.9	2.5	3.0
Select red oaks	164.6	--	2.9	1.9	7.4	129.9	14.3	1.0	7.2	--
Red oaks	749.2	3.1	2.1	24.1	117.7	534.9	60.6	1.8	--	4.9
Other red oaks	48.6	--	--	--	31.8	15.9	.9	--	--	--
Hickory A	53.4	--	--	--	14.9	24.8	12.8	.9	--	--
Hickory B	71.0	--	--	.9	28.7	28.6	10.4	--	1.6	.8
Hard maple	8.4	--	--	--	--	4.8	2.3	--	1.3	--
Soft maple	1.3	--	--	--	--	--	--	1.3	--	--
Tupelo and blackgum	13.7	--	--	--	.8	3.1	9.8	--	--	--
Ash	25.9	--	1.9	--	2.8	13.0	4.9	3.3	--	--
Sycamore	26.0	--	--	--	--	4.5	8.7	12.8	--	--
Black walnut	26.2	--	.4	--	.8	16.6	5.1	1.1	1.3	.9
Black cherry	2.7	--	--	--	--	--	2.0	.7	--	--
Elm	10.1	--	--	--	.7	6.0	1.2	--	2.2	--
Other hardwoods	9.6	--	2.0	--	--	1.0	5.6	1.0	--	--
Total hardwoods	1,888.0	4.4	21.3	43.5	425.5	1,021.8	310.3	28.9	19.1	13.2
All species	2,085.2	44.6	25.5	126.0	436.0	1,059.1	328.9	30.5	19.1	15.5

1/ International 1/4-inch rule.

Table 29.--*Net volume of timber in cull trees on commercial forest land, by species and cull tree class, Southwestern Ozarks, Missouri, 1972*

(Million cubic feet)

Species	All cull trees	Rough trees	Short-log trees[1/]	Rotten trees
Softwoods:				
Shortleaf pine	.8	.7	--	.1
Eastern redcedar	6.5	5.5	.9	.1
Total softwoods	7.3	6.2	.9	.2
Hardwoods:				
Select white oaks	102.4	64.8	27.3	10.3
Other white oaks	133.5	96.1	19.5	17.9
Select red oaks	18.2	12.4	2.2	3.6
Red oaks	144.2	95.4	22.4	26.4
Other red oaks	61.5	47.8	2.4	11.3
Hickory A	17.1	15.1	.9	1.1
Hickory B	24.4	19.4	1.9	3.1
Hard maple	3.0	1.6	.5	.9
Soft maple	1.3	.8	.4	.1
Sweetgum	.1	--	--	.1
Tupelo and blackgum	2.9	1.6	.5	.8
Ash	10.3	7.2	1.1	2.0
Sycamore	1.9	.9	--	1.0
Basswood	.4	--	.2	.2
Black walnut	7.3	6.1	.8	.4
Black cherry	2.4	1.9	--	.5
Elm	9.7	7.2	1.0	1.5
Other hardwoods	7.4	3.6	.2	3.6
Noncommercial species	1.4	1.4	--	--
Total hardwoods	549.4	383.3	81.3	84.8
All species	556.7	389.5	82.2	85.0

1/ Volumes are for trees 9.0 inches d.b.h. and larger for softwoods and 11.0 inches d.b.h. and larger for hardwoods. Volumes for rough and rotten trees are for trees 5.0 inches d.b.h. and larger.

Table 30.--*Net volume of short-log trees on commercial forest land, by species and diameter class, Southwestern Ozarks, Missouri, 1972*

(Million board feet)[1/]

Species	All classes	Diameter class (inches at breast height)									
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods:											
Eastern redcedar	3.4	2.6	--	.8	--	--	--	--	--	--	--
Total softwoods	3.4	2.6	--	.8	--	--	--	--	--	--	--
Hardwoods:											
Select white oaks	94.4	--	24.9	27.3	20.0	10.0	4.0	--	5.8	2.4	--
Other white oaks	72.5	--	34.2	21.0	8.0	5.8	1.8	--	1.2	.5	--
Select red oaks	6.5	--	2.7	.5	.4	--	.7	1.3	.9	--	--
Red oaks	69.6	--	16.4	13.5	21.1	4.9	1.5	4.5	6.3	1.4	--
Other red oaks	7.4	--	3.4	1.7	1.1	.6	--	--	.6	--	--
Hickory A	3.7	--	1.0	2.0	--	.7	--	--	--	--	--
Hickory B	5.5	--	3.8	1.2	.5	--	--	--	--	--	--
Hard maple	1.6	--	.8	--	.8	--	--	--	--	--	--
Soft maple	1.2	--	.6	.6	--	--	--	--	--	--	--
Tupelo and blackgum	1.2	--	--	.6	--	--	--	--	.6	--	--
Ash	3.4	--	1.7	1.7	--	--	--	--	--	--	--
Basswood	.4	--	--	--	--	--	--	--	--	.4	--
Black walnut	2.9	--	.8	1.7	--	.4	--	--	--	--	--
Elm	3.3	--	1.7	.7	.9	--	--	--	--	--	--
Other hardwoods	1.1	--	.5	.6	--	--	--	--	--	--	--
Total hardwoods	274.7	--	92.5	73.1	52.8	22.4	8.0	5.8	15.4	4.7	--
All species	278.1	2.6	92.5	73.9	52.8	22.4	8.0	5.8	15.4	4.7	--

1/ International 1/4-inch rule.

Table 31.--*Net volume of sawtimber on commercial forest land, by species and log grade class, Southwestern Ozarks, Missouri, 1972*

(Million board feet)[1/]

Species	All grades	Log Grade 1	Log Grade 2	Log Grade 3	Tie and timber
Softwoods:					
Shortleaf pine	186.7	25.0	27.5	134.2	--
Eastern redcedar	10.5	--	--	10.5	--
Total softwoods	197.2	25.0	27.5	144.7	--
Hardwoods:					
Select white oaks	379.6	23.3	80.3	180.6	95.4
Other white oaks	297.7	11.2	35.9	182.8	67.8
Select red oaks	164.6	9.9	69.5	71.3	13.9
Red oaks	749.2	38.2	163.2	373.2	174.6
Other red oaks	48.6	--	8.6	19.5	20.5
Hickory A	53.4	--	11.5	25.5	16.4
Hickory B	71.0	3.3	6.9	36.9	23.9
Hard maple	8.4	--	2.3	5.6	.5
Soft maple	1.3	.3	.4	.5	.1
Tupelo and blackgum	13.7	--	9.4	--	4.3
Ash	25.9	--	12.4	13.5	--
Sycamore	26.0	11.2	5.5	6.5	2.8
Black walnut	26.2	2.5	7.4	16.3	--
Black cherry	2.7	--	.3	1.9	.5
Elm	10.1	--	10.1	--	--
Other hardwoods	9.6	--	1.0	7.7	.9
Total hardwoods	1,888.0	99.9	424.7	941.8	421.6
All species	2,085.2	124.9	452.2	1,086.5	421.6

1/ International 1/4-inch rule.

Table 32.--*Walnut volume on nonforest land, by diameter class and class of timber, Southwestern Ozarks, Missouri, 1972*

Diameter class (inches at breast height)	Growing stock trees	Sawtimber trees	Rough trees	Short-log trees	Rotten trees
	Thousand cubic feet	Thousand board feet[1/]	Thousand cubic feet	Thousand board feet[1/]	Thousand cubic feet
5.0-6.9	--	--	--	--	104.1
7.0-8.9	--	--	161.6	--	--
9.0-10.9	225.5	--	479.0	--	--
11.0-12.9	871.5	4,362.1	157.1	--	58.5
13.0-14.9	270.9	1,186.9	--	743.7	--
15.0-16.9	--	--	--	665.4	123.0
17.0-18.9	--	--	--	618.1	--
19.0-20.9	307.9	1,476.8	218.6	--	--
21.0-22.9	--	--	--	--	--
23.0-28.9	574.8	3,264.6	--	--	--
29.0-38.9	--	--	--	--	738.1
39.0+	--	--	--	--	--
All diameters	2,250.6	10,290.4	1,016.3	2,027.2	1,023.7

1/ International 1/4-inch rule.

Table 33.--*Net annual growth of growing stock and sawtimber on commercial forest land, by species and county, Southwestern Ozarks, Missouri, 1971*

Species	All counties		Barry		Christian		Douglas		Howell	
	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber
	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/
Softwoods:										
Shortleaf pine	28,558	7,219	2,823	641	1,633	413	3,924	1,003	4,013	982
Eastern redcedar	4,138	368	380	34	266	22	316	32	354	32
Total softwoods	32,696	7,587	3,203	675	1,899	435	4,240	1,035	4,367	1,014
Hardwoods:										
Select white oaks	49,355	8,479	3,886	679	2,759	465	5,228	894	5,873	1,060
Other white oaks	35,164	4,379	2,669	323	1,878	224	3,712	483	4,318	573
Select red oaks	22,126	5,382	1,784	421	1,196	286	2,351	561	2,727	679
Red oaks	132,771	22,334	10,354	1,794	7,190	1,200	14,114	2,343	16,203	2,830
Other red oaks	6,962	1,064	532	80	367	56	734	112	835	133
Hickory A	8,165	954	638	74	455	53	866	100	976	115
Hickory B	13,635	1,332	1,038	103	747	71	1,443	142	1,620	164
Hard maple	1,074	176	80	13	59	9	116	19	128	23
Soft maple	89	47	6	3	10	5	8	5	5	3
Tupelo and blackgum	1,039	201	89	16	50	11	114	22	127	25
Ash	3,176	677	253	55	190	39	329	69	354	84
Sycamore	5,088	1,446	380	106	342	102	519	145	494	140
Basswood	152	--	13	--	9	—	17	--	18	--
Black walnut	4,440	668	342	51	240	33	468	71	506	85
Black cherry	213	48	15	3	16	4	21	5	19	4
Elm	1,013	-55	63	-4	51	-6	89	-2	114	1
Other hardwoods	3,924	189	304	15	228	12	405	19	430	19
Total hardwoods	288,386	47,321	22,446	3,732	15,787	2,564	30,534	4,988	34,747	5,938
All species	321,082	54,908	25,649	4,407	17,686	2,999	34,774	6,023	39,114	6,952

(Table 33 cont. on next page)

(Table 33 cont.)

Species	McDonald		Newton		Ozark		Stone		Taney	
	Growing stock	Saw-timber	Growing stock	Saw-timber	Growing stock	Saw-timber	Growing stock	Saw-timber	Growing stock	Saw-timber
	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/
Softwoods:										
Shortleaf pine	1,418	368	873	223	2,531	636	1,165	295	1,266	332
Eastern redcedar	228	20	177	12	456	49	316	22	696	63
Total softwoods	1,646	388	1,050	235	2,987	685	1,481	317	1,962	395
Hardwoods:										
Select white oaks	3,835	658	2,329	415	5,089	889	2,671	440	3,418	573
Other white oaks	2,816	358	1,682	222	3,550	456	1,828	198	2,439	237
Select red oaks	1,722	431	1,032	263	2,278	564	1,178	279	1,556	359
Red oaks	10,759	1,785	6,190	1,074	13,367	2,281	6,873	1,160	8,253	1,407
Other red oaks	557	86	329	53	709	110	367	55	481	72
Hickory A	644	76	387	46	839	98	427	50	559	66
Hickory B	1,063	104	620	64	1,380	136	722	68	1,013	94
Hard maple	82	13	49	8	105	18	56	9	82	13
Soft maple	6	3	6	3	14	7	6	3	3	1
Tupelo and blackgum	89	16	51	10	101	21	51	11	63	13
Ash	240	53	152	34	355	74	177	37	228	43
Sycamore	392	113	241	75	595	175	291	82	316	79
Basswood	10	--	6	--	16	--	7	--	13	--
Black walnut	342	58	203	36	466	65	253	37	329	27
Black cherry	17	3	10	3	24	6	13	3	12	2
Elm	89	-2	51	-4	114	-3	63	-9	101	-15
Other hardwoods	329	15	177	9	393	22	215	10	266	13
Total hardwoods	22,992	3,770	13,515	2,311	29,395	4,919	15,198	2,433	19,132	2,984
All species	24,638	4,158	14,565	2,546	32,382	5,604	16,679	2,750	21,094	3,379

(Table 33 cont. below)

(Table 33 cont.)

Species	Texas		Webster		Wright	
	Growing stock	Saw-timber	Growing stock	Saw-timber	Growing stock	Saw-timber
	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/	Cords	Thousand bd.ft.1/
Softwoods:						
Shortleaf pine	6,418	1,686	1,025	261	1,469	379
Eastern redcedar	468	46	203	15	278	21
Total softwoods	6,886	1,732	1,228	276	1,747	400
Hardwoods:						
Select white oaks	8,051	1,343	2,722	481	3,494	582
Other white oaks	5,824	738	1,957	253	2,491	314
Select red oaks	3,583	859	1,209	307	1,510	373
Red oaks	22,620	3,667	7,342	1,264	9,506	1,529
Other red oaks	1,165	171	380	61	506	75
Hickory A	1,335	155	453	53	586	68
Hickory B	2,279	218	735	74	975	94
Hard maple	178	28	58	10	81	13
Soft maple	7	4	5	3	13	7
Tupelo and blackgum	177	32	51	11	76	13
Ash	468	101	177	39	253	49
Sycamore	759	202	278	84	481	143
Basswood	24	--	8	--	11	--
Black walnut	722	112	240	41	329	52
Black cherry	32	6	12	3	22	6
Elm	139	-5	63	-2	76	-4
Other hardwoods	658	29	215	11	304	15
Total hardwoods	48,021	7,660	15,905	2,693	20,714	3,329
All species	54,907	9,392	17,133	2,969	22,461	3,729

1/ International 1/4-inch rule.

Table 34.--*Timber removals from growing stock and sawtimber on commercial forest land, by item and species group, Southwestern Ozarks, Missouri, 1971*[1/]

Item	Growing stock					Sawtimber				
	All species	Shortleaf pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Shortleaf pine	Other softwoods	Soft hardwoods	Hard hardwoods
	Cords					Thousand board feet[2/]				
Roundwood products:										
Saw logs	119,689	11,027	4,522	8,481	95,659	46,346	5,269	1,693	4,224	35,160
Cooperage logs	6,835	--	--	--	6,835	3,249	--	--	--	3,249
Charcoal wood	12,000	--	--	51	11,949	1,399	--	--	6	1,393
Posts	10,064	4,837	316	139	4,772	1,401	240	15	37	1,109
Poles	2,083	2,058	--	--	25	288	288	--	--	--
Fuelwood	22,140	--	165	2,025	19,950	4,149	--	31	382	3,736
Miscellaneous[3/]	1,013	--	--	102	911	434	--	--	43	391
All products	173,824	17,922	5,003	10,798	140,101	57,266	5,797	1,739	4,692	45,038
Logging residues	33,721	1,187	15	924	31,595	3,900	139	1	131	3,629
Other removals	198,784	40,430	--	12,975	145,379	23,834	2,324	--	1,763	19,747
Total removals	406,329	59,539	5,018	24,697	317,075	85,000	8,260	1,740	6,586	68,414

1/ See glossary for timber removals from growing stock (page 5).
2/ International 1/4-inch rule.
3/ Includes shaving wood, heading bolts, etc.

Table 35.--*Timber removals from growing stock and sawtimber on commercial forest land, by species and county, Southwestern Ozarks, Missouri, 1971*[1/]

Species	All counties		Barry		Christian		Douglas		Howell	
	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber
	Cords	Thousand bd. ft.[2]/	Cords	Thousand bd. ft.[2]/	Cords	Thousand bd. ft.[2]/	Cords	Thousand bd. ft.[2]/	Cords	Thousand bd. ft.[2]/
Softwoods:										
Shortleaf pine	59,539	8,260	3,942	208	2,559	165	7,689	928	10,134	1,679
Eastern redcedar	4,883	1,734	135	42	180	66	226	84	--	--
Other softwoods	135	6	--	--	--	--	--	--	--	--
Total softwoods	64,557	10,000	4,077	250	2,739	231	7,915	1,012	10,134	1,679
Hardwoods:										
Select white oaks	52,602	12,489	3,436	766	1,941	455	4,288	1,016	11,283	2,973
Other white oaks	54,436	11,427	3,725	733	2,240	447	4,764	972	10,300	2,489
Select red oaks	8,524	1,966	804	197	430	98	816	185	1,938	496
Red oaks	169,727	35,425	15,303	3,456	8,687	1,778	16,689	3,419	34,517	8,281
Other red oaks	4,140	832	361	79	211	42	410	81	801	187
Hickory A	430	58	34	4	24	3	46	6	51	7
Hickory B	22,505	4,680	1,276	217	1,191	251	1,720	287	4,645	1,161
Hard maple	140	57	--	--	25	9	--	3	--	--
Soft maple	253	120	--	--	89	38	--	2	--	--
Tupelo and blackgum	659	305	291	134	38	18	76	29	63	31
Ash	1,533	489	551	208	180	58	75	15	102	29
Sycamore	9,189	3,486	1,153	474	495	178	505	158	1,191	477
Cottonwood	140	69	--	--	--	--	--	--	--	--
River birch	38	11	--	--	--	--	--	--	--	--
Basswood	115	63	51	27	--	3	--	--	--	--
Black walnut	3,000	980	209	65	745	263	155	47	121	34
Black cherry	51	16	--	--	--	3	--	3	--	--
Elm	13,301	2,330	1,555	388	702	104	1,194	195	1,330	222
Other hardwoods	989	197	89	19	25	8	89	19	114	21
Total hardwoods	341,772	75,000	28,838	6,767	17,023	3,756	30,827	6,437	66,456	16,408
All species	406,329	85,000	32,915	7,017	19,762	3,987	38,742	7,449	76,590	18,087

(Table 35 cont. on next page)

(Table 35 cont.)

Species	McDonald		Newton		Ozark		Stone		Taney	
	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber
	Cords	Thousand bd. ft.2/	Cords	Thousand bd. ft.2/	Cords	Thousand bd. ft.2/	Cords	Thousand bd. ft.2/	Cords	Thousand bd. ft.2/
Softwoods:										
Shortleaf pine	1,946	116	1,169	70	3,923	327	1,564	91	1,812	140
Eastern redcedar	--	--	--	--	1,067	383	75	21	3,200	1,138
Other softwoods	--	--	--	--	--	--	--	--	135	6
Total softwoods	1,946	116	1,169	70	4,990	710	1,639	112	5,147	1,284
Hardwoods:										
Select white oaks	2,862	677	2,099	447	4,775	1,147	1,540	293	2,186	384
Other white oaks	3,320	664	2,267	433	5,082	1,071	1,946	329	2,816	456
Select red oaks	464	104	287	56	729	167	236	39	383	68
Red oaks	10,317	2,007	6,233	1,113	15,065	3,089	5,588	872	8,094	1,335
Other red oaks	261	49	158	27	374	73	144	22	216	35
Hickory A	34	5	20	3	44	6	22	3	29	4
Hickory B	1,404	260	783	116	2,287	534	786	103	1,197	160
Hard maple	--	2	--	2	--	--	--	--	--	1
Soft maple	--	--	--	--	--	--	--	2	38	16
Tupelo and blackgum	--	--	--	--	51	28	--	1	25	11
Ash	69	22	11	2	90	24	14	2	223	64
Sycamore	696	265	448	171	1,102	418	156	32	707	278
Cottonwood	--	--	--	--	--	1	--	--	13	4
River birch	--	--	--	--	--	--	--	--	--	--
Basswood	--	--	--	--	--	--	--	--	38	23
Black walnut	283	93	309	105	133	37	61	19	327	106
Black cherry	--	--	--	--	--	2	--	--	--	--
Elm	1,038	214	605	109	1,181	171	726	82	1,457	208
Other hardwoods	76	13	89	18	51	9	38	10	76	16
Total hardwoods	20,824	4,375	13,309	2,602	30,964	6,777	11,257	1,809	17,825	3,169
All species	22,770	4,491	14,478	2,672	35,954	7,487	12,896	1,921	22,972	4,453

(Table 35 cont. on next page)

(Table 35 cont.)

Species	Texas		Webster		Wright	
	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber
	Cords	Thousand bd. ft.2/	Cords	Thousand bd. ft.2/	Cords	Thousand bd. ft.2/
Softwoods:						
Shortleaf pine	21,398	4,335	1,381	82	2,022	119
Eastern redcedar	--	--	--	--	--	--
Other softwoods	--	--	--	--	--	--
Total softwoods	21,398	4,335	1,381	82	2,022	119
Hardwoods:						
Select white oaks	12,749	3,090	2,331	540	3,112	701
Other white oaks	12,041	2,648	2,560	519	3,375	666
Select red oaks	1,802	429	296	61	339	66
Red oaks	34,467	7,474	6,725	1,234	8,042	1,367
Other red oaks	821	171	172	31	211	35
Hickory A	71	10	24	3	31	4
Hickory B	5,235	1,282	803	121	1,178	188
Hard maple	13	2	13	6	89	32
Soft maple	101	44	--	2	25	16
Tupelo and blackgum	89	41	13	7	13	5
Ash	111	34	51	16	56	15
Sycamore	1,917	764	352	124	467	147
Cottonwood	127	64	--	--	--	--
River birch	38	11	--	--	--	--
Basswood	--	--	13	5	13	5
Black walnut	139	36	388	135	130	40
Black cherry	38	4	--	--	13	4
Elm	2,021	383	616	90	876	164
Other hardwoods	152	29	89	16	101	19
Total hardwoods	71,932	16,516	14,446	2,910	18,071	3,474
All species	93,330	20,851	15,827	2,992	20,093	3,593

1/ See glossary for timber removals from growing stock (page 5).

2/ International 1/4-inch rule.

Table 36.--*Annual mortality of growing stock and sawtimber on commercial forest land, by cause and softwoods and hardwoods, Southwestern Ozarks, Missouri, 1971*

Cause	Growing stock			Sawtimber		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cubic feet			Thousand board feet[1/]		
Disease	804	--	804	2,563	--	2,563
Fire	72	--	72	47	--	47
Weather	651	91	560	2,352	496	1,856
Unknown and other	292	--	292	607	--	607
Logging	38	--	38	94	--	94
All causes	1,857	91	1,766	5,663	496	5,167

1/ International 1/4-inch rule.

Table 37.--*Annual mortality of growing stock and sawtimber on commercial forest land, by species, Southwestern Ozarks, Missouri, 1971*

Species	Growing stock	Sawtimber
	Thousand cubic feet	Thousand board feet[1/]
Softwoods:		
Shortleaf pine	91	496
Total softwoods	91	496
Hardwoods:		
Select white oaks	249	1,085
Other white oaks	162	440
Red oaks	1,132	3,252
Black walnut	130	174
Elm	93	216
Total hardwoods	1,766	5,167
All species	1,857	5,663

1/ International 1/4-inch rule.

Table 38.--*Output of timber products by source of material and softwoods and hardwoods, Southwestern Ozarks, Missouri, 1969*

Product and species group	Standard unit[1]	Total		Roundwood products				Plant byproducts	
				Growing stock		Nongrowing stock			
		No. of units	M cu. ft.	No. of units	M cu. ft.	No. of units	M cu. ft.	No. of units	M cu. ft.
Saw logs:	M bd. ft.								
Softwood		5,649	1,037	5,638	1,035	11	2	--	--
Hardwood		67,787	12,053	46,180	8,227	21,607	3,826	--	--
Total		73,436	13,090	51,818	9,262	21,618	3,828	--	--
Cooperage logs:	M bd. ft.								
Hardwood		3,620	596	3,280	540	340	56	--	--
Total		3,620	596	3,280	540	340	56	--	--
Pulpwood:									
Hardwood	Std. cords	2,000	158	--	--	--	--	2,000	158
Total		2,000	158	--	--	--	--	2,000	158
Poles:	M pieces								
Softwood		46,100	137	46,100	137	--	--	--	--
Hardwood		700	2	700	2	--	--	--	--
Total		46,800	139	46,800	139	--	--	--	--
Posts:	M pieces								
Softwood		657	503	448	343	209	160	--	--
Hardwood		1,001	558	692	388	309	170	--	--
Total		1,658	1,061	1,140	731	518	330	--	--
Charcoal wood:	Std. cords								
Softwood		771	54	--	--	--	--	771	54
Hardwood		59,727	4,163	13,625	948	29,117	2,026	16,985	1,189
Total		60,498	4,217	13,625	948	29,117	2,026	17,756	1,243
Other:[2]	M cu. ft.								
Softwood		58	58	--	--	--	--	58	58
Hardwood		403	403	80	80	--	--	323	323
Total		461	461	80	80	--	--	381	381
Fuelwood:	Std. cords								
Softwood		765	47	185	11	318	19	262	17
Hardwood		92,920	6,037	26,720	1,736	57,277	3,721	8,923	580
Total		93,685	6,084	26,905	1,747	57,595	3,740	9,185	597
All products:	M cu. ft.								
Softwood		1,836	1,836	1,526	1,526	181	181	129	129
Hardwood		23,970	23,970	11,921	11,921	9,799	9,799	2,250	2,250
Total		25,806	25,806	13,447	13,447	9,980	9,980	2,379	2,379

1/ M (meaning thousand) board feet by International 1/4-inch rule. Cords are on a roughwood, 128-cubic foot basis.

2/ Other (industrial production) includes handle bolts, shaving bolts, heading stock, etc.

Table 39.--*Forest products harvested by ownership class and product, Southwestern Ozarks, Missouri, 1969*

Ownership class	Saw logs	Cooperage logs	Veneer logs	Pulpwood	Charcoal wood	Posts	Fuelwood	Poles	Mine timbers	Handle bolts	Miscellaneous
	M bd.ft.[1]	M bd.ft.[1]	M bd.ft.[1]	Cords[2]	Cords[2]	M pieces	Cords[2]	Pieces	M cu.ft.	M bd.ft.[1]	M cu.ft.
Federal:											
National Forest:											
Softwoods	536	--	--	--	--	75	--	50	--	--	--
Hardwoods	10,857	91	--	--	679	--	1,501	--	--	--	--
Corps of Engineers:											
Softwoods	--	--	--	--	--	4	--	--	--	--	--
Total	11,393	91	--	--	679	79	1,501	50	--	--	--
State:											
Softwoods	--	--	--	--	--	2	--	--	--	--	--
Hardwoods	--	--	--	--	46	--	--	--	--	--	--
Total	--	--	--	--	46	2	--	--	--	--	--
Private:											
Industrial:											
Softwoods	357	--	--	--	--	--	--	--	--	--	--
Hardwoods	2,289	12	--	--	11	--	--	--	--	--	--
Farm and other:											
Softwoods	4,756	--	--	--	--	576	503	46,050	--	--	--
Hardwoods	54,641	3,517	--	--	42,006	1,001	82,496	700	--	--	80
Total	62,043	3,529	--	--	42,017	1,577	82,999	46,750	--	--	80
All owners:											
Softwoods	5,649	--	--	--	--	657	503	46,100	--	--	--
Hardwoods	67,787	3,620	--	--	42,742	1,001	83,997	700	--	--	80
Total	73,436	3,620	--	--	42,742	1,658	84,500	46,800	--	--	80

1/ International 1/4-inch rule.
2/ Standard cords, rough wood basis.

Table 40.--*Volume of primary plant residue, by kind of material and type of use, Southwestern Ozarks, Missouri, 1969*

(Thousand cubic feet)

Source industry and kind of residue	Volume by type of use								
	Fiber[1]		Charcoal		Fuel[2]		Other[3]		Not used[4]
	Hardwoods	Softwoods	Hardwoods	Softwoods	Hardwoods	Softwoods	Hardwoods	Softwoods	Hardwoods
Lumber:									
Coarse	158	54	1,147	17	427	26	--	208	1,605
Fine	--	--	--	--	99	32	247	147	1,957
Total	158	54	1,147	17	526	58	247	355	3,562
All other:									
Coarse	--	--	42	--	54	--	--	--	40
Fine	--	--	--	--	--	--	76	--	144
Total	--	--	42	--	54	--	76	--	184
All industries:									
Coarse	158	54	1,189	17	481	26	--	208	1,645
Fine	--	--	--	--	99	32	323	147	2,101
Total	158	54	1,189	17	580	58	323	355	3,746

1/ For manufacture of pulp, hardboard, or roofing felt.
2/ All residue used for industrial or domestic fuel whether sold or given away.
3/ Includes uses such as livestock bedding, mulch, small dimension, and specialty items.
4/ Includes residue burned as waste.

Table 41.--*Timber products output from roundwood, by species and product, Southwestern Ozarks, Missouri, 1969*

Species	Saw logs		Veneer logs		Cooperage logs		Charcoal wood		Other products 3/	All products
	M bd. ft. 1/	M cu. ft.	M bd. ft. 1/	M cu. ft.	M bd. ft. 1/	M cu. ft.	Cords 2/	M cu. ft.	M cu. ft.	M cu. ft.
Softwoods:										
Shortleaf pine	4,231	735	0	0	0	0	0	0	610	1,345
Eastern redcedar	1,418	302	0	0	0	0	0	0	47	349
Other softwoods	0	0	0	0	0	0	0	0	13	13
Total softwoods	5,649	1,037	0	0	0	0	0	0	670	1,707
Hardwoods:										
White oaks	18,473	3,299	0	0	3,620	596	12,321	860	4,058	8,813
Red oaks	11,051	1,971	0	0	0	0	5,545	383	407	2,761
Black oak	28,630	5,112	0	0	0	0	18,616	1,295	815	7,222
Hickory	2,305	393	0	0	0	0	5,722	400	279	1,072
Hard maple	54	7	0	0	0	0	60	3	0	10
Soft maple	136	20	0	0	0	0	0	0	0	20
Blackgum	340	55	0	0	0	0	48	3	0	58
Ash	414	69	0	0	0	0	310	21	11	101
Cottonwood	66	10	0	0	0	0	0	0	0	10
Basswood	70	10	0	0	0	0	0	0	0	10
Black walnut	1,971	431	0	0	0	0	0	0	0	431
Black cherry	13	1	0	0	0	0	120	9	0	10
Elm	706	110	0	0	0	0	0	0	284	394
Birch	6	1	0	0	0	0	0	0	2	3
Sycamore	3,547	563	0	0	0	0	0	0	8	571
Other hardwoods	5	1	0	0	0	0	0	0	233	234
Total hardwoods	67,787	12,053	0	0	3,620	596	42,742	2,974	6,097	21,720
All species	73,436	13,090	0	0	3,620	596	42,742	2,974	6,767	23,427

1/ International 1/4-inch rule.
2/ Standard cords, rough wood basis.
3/ Includes posts, fuelwood, shaving bolts, heading bolts, etc.

Table 42.--*Average annual allowable cut for 1972-1981 from harvest cuttings and thinnings, on commercial forest land, by species and kind of material, Southwestern Ozarks, Missouri*

Species	Growing stock[1]			Sawtimber[1]	Rough and rotten trees		
	Total	Poletimber trees	Sawtimber trees	Total	Total	Short-log trees	Other
	Cords			Thousand board feet[2]	Cords		
Softwoods:							
Shortleaf pine	18,443	5,583	12,860	5,523	63	--	63
Eastern redcedar	987	569	418	187	1,608	266	1,342
Total softwoods	19,430	6,152	13,278	5,710	1,671	266	1,405
Hardwoods:							
Select white oaks	55,759	23,329	32,430	12,892	33,746	11,822	21,924
Other white oaks	52,962	20,532	32,430	11,955	34,000	5,646	28,354
Select red oaks	22,975	4,949	18,026	6,983	9,392	1,304	8,088
Red oaks	87,405	28,051	59,354	23,011	50,696	7,836	42,860
Other red oaks	7,000	2,430	4,570	1,981	17,671	494	17,177
Hickory A	5,684	3,266	2,418	896	4,734	--	4,734
Hickory B	16,253	10,430	5,823	2,117	6,899	861	6,038
Hard maple	2,215	190	2,025	652	494	405	89
Soft maple	152	--	152	54	380	102	278
Sweetgum	--	--	--	--	152	--	152
Tupelo and blackgum	2,861	1,899	962	342	1,000	278	722
Ash	4,126	949	3,177	1,249	2,987	379	2,608
Sycamore	1,747	101	1,646	641	127	--	127
Black walnut	4,266	1,709	2,557	926	3,127	405	2,722
Black cherry	430	--	430	208	1,076	--	1,076
Elm	2,595	1,747	848	371	2,139	177	1,962
Other hardwoods	747	--	747	254	1,418	--	1,418
Noncommercial species	--	--	--	--	342	--	342
Total hardwoods	267,177	99,582	167,595	64,532	170,380	29,709	140,671
All species	286,607	105,734	180,873	70,242	172,051	29,975	142,076

1/ Cuttings of less than 3 cords per acre, or the equivalent in board feet, are excluded.
2/ International 1/4-inch rule.

Table 43.--*Average annual allowable cut[1/] of growing stock for 1972-1981 from harvest cuttings and thinnings, on commercial forest land, by species and forest type, Southwestern Ozarks, Missouri*

(Thousand cubic feet)

Species	All forest types	Shortleaf pine	Eastern redcedar-hardwood	Shortleaf pine-oak	Post-blackjack oak	Black-scarlet oak	White oak	Elm-ash-cottonwood	Maple-beech
Softwoods:									
Shortleaf pine	1,457	350	26	513	136	292	140	--	--
Eastern redcedar	78	--	78	--	--	--	--	--	--
Total softwoods	1,535	350	104	513	136	292	140	--	--
Hardwoods:									
Select white oaks	4,405	6	125	73	436	2,159	1,566	40	--
Other white oaks	4,184	22	12	68	2,994	914	150	--	24
Select red oaks	1,815	--	36	101	174	1,389	94	21	--
Red oaks	6,905	32	11	221	922	5,272	447	--	--
Other red oaks	553	--	--	--	408	145	--	--	--
Hickory A	449	--	--	11	97	330	11	--	--
Hickory B	1,284	--	8	6	581	490	199	--	--
Hard maple	175	--	--	--	--	117	58	--	--
Soft maple	12	--	--	--	--	--	--	12	--
Tupelo and blackgum	226	--	--	--	--	125	101	--	--
Ash	326	--	20	--	51	122	85	48	--
Sycamore	138	--	--	--	--	138	--	--	--
Black walnut	337	--	43	--	15	199	43	15	22
Black cherry	34	--	--	--	--	--	34	--	--
Elm	205	--	9	--	69	77	50	--	--
Other hardwoods	59	--	36	--	--	23	--	--	--
Total hardwoods	21,107	60	300	480	5,747	11,500	2,838	136	46
All species	22,642	410	404	993	5,883	11,792	2,978	136	46

1/ Cuttings of less than 240 cubic feet per acre are excluded.

Table 44.--*Average annual allowable cut of growing stock for 1972-1981 from harvest cuttings and thinnings, on commercial forest land, by species and stand-volume class, Southwestern Ozarks, Missouri*

(Thousand cubic feet)

Species	All classes	Stand-volume class[1/] (Cubic feet per acre)			
		240-399	400-799	800-1,199	1,200-1,599
Softwoods:					
Shortleaf pine	1,457	430	558	269	200
Eastern redcedar	78	28	29	21	--
Total softwoods	1,535	458	587	290	200
Hardwoods:					
Select white oaks	4,405	443	1,717	1,233	1,012
Other white oaks	4,184	413	2,091	1,255	425
Select red oaks	1,815	240	467	519	589
Red oaks	6,905	543	2,717	2,266	1,379
Other red oaks	553	80	285	95	93
Hickory A	449	135	227	87	--
Hickory B	1,284	206	592	379	107
Hard maple	175	--	96	--	79
Soft maple	12	--	12	--	--
Tupelo and blackgum	226	--	26	88	112
Ash	326	5	203	118	--
Sycamore	138	47	--	91	--
Black walnut	337	57	104	107	69
Black cherry	34	--	--	34	--
Elm	205	17	73	80	35
Other hardwoods	59	23	--	36	--
Total hardwoods	21,107	2,209	8,610	6,388	3,900
All species	22,642	2,667	9,197	6,678	4,100

1/ Cuttings of less than 240 cubic feet per acre are excluded.

Table 45.--*Average annual allowable cut for 1972-1981, by harvest cuttings of growing stock on commercial forest land, by species and stand-volume class, Southwestern Ozarks, Missouri*

(Thousand cubic feet)

Species	All classes	Stand-volume class[1] (cubic feet per acre) 240-399	400-799	800-1,199	1,200-1,599
Softwoods:					
Shortleaf pine	1,280	314	497	269	200
Eastern redcedar	78	28	29	21	--
Total softwoods	1,358	342	526	290	200
Hardwoods:					
Select white oaks	4,028	386	1,574	1,077	991
Other white oaks	4,040	407	1,992	1,255	386
Select red oaks	1,695	175	437	519	564
Red oaks	5,478	367	1,815	2,192	1,104
Other red oaks	482	80	278	95	29
Hickory A	369	80	202	87	--
Hickory B	1,231	177	568	379	107
Hard maple	175	--	96	--	79
Soft maple	12	--	12	--	--
Tupelo and blackgum	213	--	13	88	112
Ash	321	--	203	118	--
Sycamore	130	39	--	91	--
Black walnut	291	37	85	100	69
Black cherry	34	--	--	34	--
Elm	202	14	73	80	35
Other hardwoods	59	23	--	36	--
Total hardwoods	18,760	1,785	7,348	6,151	3,476
All species	20,118	2,127	7,874	6,441	3,676

1/ Cuttings of less than 240 cubic feet per acre are excluded.

Table 46.--*Average annual allowable cut for 1972-1981, by thinnings of growing stock on commercial forest land, by species and stand-volume class, Southwestern Ozarks, Missouri*

(Thousand cubic feet)

Species	All classes	Stand-volume class 1/ (cubic feet per acre)			
		240-399	400-799	800-1,199	1,200-1,599
Softwoods:					
Shortleaf pine	177	116	61	--	--
Total softwoods	177	116	61	--	--
Hardwoods					
Select white oaks	377	57	143	156	21
Other white oaks	144	6	99	--	39
Select red oaks	120	65	30	--	25
Red oaks	1,427	176	902	74	275
Other red oaks	71	--	7	--	64
Hickory A	80	55	25	--	--
Hickory B	53	29	24	--	--
Tupelo and blackgum	13	--	13	--	--
Ash	5	5	--	--	--
Sycamore	8	8	--	--	--
Black walnut	46	20	19	7	--
Elm	3	3	--	--	--
Total hardwoods	2,347	424	1,262	237	424
All species	2,524	540	1,323	237	424

1/ Cuttings of less than 240 cubic feet per acre are excluded.

Table 47.--*Average annual allowable cut of sawtimber[1/] for 1972-1981 from harvest cuttings and thinnings, on commercial forest land, by species and forest type, Southwestern Ozarks, Missouri*

(Thousand board feet)[2/]

Species	All forest types	Shortleaf pine	Eastern redcedar-hardwood	Shortleaf pine-oak	Post-blackjack oak	Black scarlet oak	White oak	Elm-ash-cottonwood	Maple-beech
Softwoods:									
Shortleaf pine	5,862	1,184	153	2,337	481	1,221	419	67	--
Eastern redcedar	187	--	187	--	--	--	--	--	--
Total softwoods	6,049	1,184	340	2,337	481	1,221	419	67	--
Hardwoods:									
Select white oaks	13,221	31	61	199	1,547	6,504	4,719	160	--
Other white oaks	12,050	29	67	232	8,395	2,459	748	--	120
Select red oaks	7,056	--	200	8	517	5,832	391	108	--
Red oaks	23,392	118	57	874	3,059	17,829	1,440	15	--
Other red oaks	1,991	--	--	--	1,625	364	2	--	--
Hickory A	961	--	--	--	384	489	51	37	--
Hickory B	2,124	--	--	--	790	900	434	--	--
Hard maple	653	--	--	--	--	409	244	--	--
Soft maple	54	--	--	--	--	--	--	54	--
Tupelo and blackgum	347	--	--	--	--	92	255	--	--
Ash	1,256	--	57	--	192	637	232	138	--
Sycamore	968	--	--	--	--	641	18	309	--
Black walnut	930	--	45	--	--	818	3	--	64
Black cherry	208	--	--	--	--	--	208	--	--
Elm	371	--	--	--	--	234	137	--	--
Other hardwoods	260	--	150	--	--	110	--	--	--
Total hardwoods	65,842	178	637	1,313	16,509	37,318	8,882	821	184
All species	71,891	1,362	977	3,650	16,990	38,539	9,301	888	184

1/ Cuttings of less than 3 cords per acre, or the equivalent in board feet, are included.

2/ International 1/4-inch rule.

Table 48.--*Average annual allowable cut of sawtimber*[1/] *for 1972-1981 from harvest cuttings and thinnings, on commercial forest land, by species and stand-volume class, Southwestern Ozarks, Missouri*

(Thousand board feet)[2/]

Species	All classes	Stand-volume class (board feet per acre)		
		0-1,499	1,500-2,499	2,500-4,999
Softwoods:				
Shortleaf pine	5,862	2,255	1,539	2,068
Eastern redcedar	187	124	63	--
Total softwoods	6,049	2,379	1,602	2,068
Hardwoods:				
Select white oaks	13,221	3,313	4,925	4,983
Other white oaks	12,050	4,631	5,610	1,809
Select red oaks	7,056	2,018	1,499	3,539
Red oaks	23,392	9,203	5,769	8,420
Other red oaks	1,991	1,121	870	--
Hickory A	961	679	44	238
Hickory B	2,124	879	817	428
Hard maple	653	84	244	325
Soft maple	54	54	--	--
Tupelo and blackgum	347	5	56	286
Ash	1,256	405	392	459
Sycamore	968	519	--	449
Black walnut	930	301	225	404
Black cherry	208	208	--	--
Elm	371	137	--	234
Other hardwoods	260	116	144	--
Total hardwoods	65,842	23,673	20,595	21,574
All species	71,891	26,052	22,197	23,642

1/ Cuttings of less than 3 cords per acre, or the equivalent in board feet, are included.

2/ International 1/4-inch rule.

Table 49.--*Average annual allowable cut for 1972-1981, by harvest cuttings of sawtimber*[1] *on commercial forest land, by species and stand-volume class, Southwestern Ozarks, Missouri*

(Thousand board feet)[2]

Species	All classes	Stand-volume class (board feet per acre)		
		0-1,499	1,500-2,499	2,500-4,999
Softwoods:				
Shortleaf pine	5,313	1,706	1,539	2,068
Eastern redcedar	187	124	63	--
Total softwoods	5,500	1,830	1,602	2,068
Hardwoods:				
Select white oaks	12,457	3,066	4,408	4,983
Other white oaks	11,723	4,304	5,610	1,809
Select red oaks	6,680	1,680	1,461	3,539
Red oaks	20,157	6,222	5,515	8,420
Other red oaks	1,989	1,119	870	--
Hickory A	777	539	--	238
Hickory B	2,124	879	817	428
Hard maple	653	84	244	325
Soft maple	54	54	--	--
Tupelo and blackgum	291	5	--	286
Ash	1,233	382	392	459
Sycamore	896	447	--	449
Black walnut	859	230	225	404
Black cherry	208	208	--	--
Elm	371	137	--	234
Other hardwoods	260	116	144	--
Total hardwoods	60,732	19,472	19,686	21,574
All species	66,232	21,302	21,288	23,642

1/ Cuttings of less than 3 cords per acre, or the equivalent in board feet, are included.

2/ International 1/4-inch rule.

Table 50.--*Average annual allowable cut for 1972-1981 by thinnings of sawtimber[1] on commercial forest land, by species and stand-volume class, Southwestern Ozarks, Missouri*

(Thousand board feet)[2]

Species	All classes	Stand-volume class (board feet per acre)	
		0-1,499	1,500-2,499
Softwoods:			
Shortleaf pine	549	549	--
Total softwoods	549	549	--
Hardwoods:			
Select white oaks	764	247	517
Other white oaks	327	327	--
Select red oaks	376	338	38
Red oaks	3,235	2,981	254
Other red oaks	2	2	--
Hickory A	184	140	44
Tupelo and blackgum	56	--	56
Ash	23	23	--
Sycamore	72	72	--
Black walnut	71	71	--
Total hardwoods	5,110	4,201	909
All species	5,659	4,750	909

1/ Cuttings of less than 3 cords per acre, or the equivalent in board feet, are included.
2/ International 1/4-inch rule.

Table 51.--*Area of allowable cut[1/] for 1972-1981, by harvest cuttings on commercial forest land, by forest type and stand-age class, Southwestern Ozarks, Missouri*

(Thousand acres)

Forest type	All ages	Stand-age class (years)										
		10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-119	120-139
Shortleaf pine	3.5	--	--	--	--	--	3.5	--	--	--	--	--
Eastern redcedar	1.9	.6	--	1.3	--	--	--	--	--	--	--	--
Eastern redcedar-hardwood	14.7	--	--	--	1.0	6.8	2.3	--	2.3	--	2.3	--
Shortleaf pine-oak	11.0	--	--	--	--	1.5	5.9	3.6	--	--	--	--
Post-blackjack oak	144.8	--	--	--	--	--	22.9	51.0	15.8	11.8	23.7	19.6
Black-scarlet oak	150.1	--	--	--	--	--	18.2	60.0	15.8	28.1	20.0	8.0
White oak	51.6	--	--	--	--	--	1.1	14.4	6.9	14.7	14.5	--
Elm-ash-cottonwood	5.9	--	--	--	--	3.2	2.7	--	--	--	--	--
Maple-beech	1.5	--	--	--	--	--	--	--	1.5	--	--	--
All forest types	385.0	.6	--	1.3	1.0	11.5	56.6	129.0	42.3	54.6	60.5	27.6

1/ For a 10-year period.

Table 52.--*Area of allowable cut[1/] by thinnings on commercial forest land for 1972-1981, by forest type and stand-age class, Southwestern Ozarks, Missouri*

(Thousand acres)

Forest type	All ages	Stand-age class (years)						
		0-9	10-19	20-29	30-39	40-49	50-59	60-69
Shortleaf pine	2.4	--	2.4	--	--	--	--	--
Shortleaf pine-oak	2.6	--	--	--	--	2.6	--	--
Black-scarlet oak	168.0	--	14.5	39.0	47.2	35.8	31.5	--
White oak	31.7	3.4	--	6.3	3.5	3.7	7.5	7.3
Elm-ash-cottonwood	3.5	--	--	3.5	--	--	--	--
All forest types	208.2	3.4	16.9	48.8	50.7	42.1	39.0	7.3

1/ For a 10-year period.

PRINCIPAL TREE SPECIES IN MISSOURI'S SOUTHWESTERN OZARKS UNIT[3/]

TWOOD SPECIES

rtleaf pine . . . . . *Pinus echinata*
tern redcedar . . . . . *Juniperus virginiana*

D HARDWOOD SPECIES

es:
hite ash . . . . . *Fraxinus americana*
reen ash . . . . . *Fraxinus pennsylvanica*
lue ash . . . . . *Fraxinus quadrangulata*

ck walnut . . . . . *Juglans nigra*

d maples:
ugar maple . . . . . *Acer saccharum*

kory group A:
hellbark hickory . . . . . *Carya laciniosa*
hagbark hickory . . . . . *Carya ovata*
ockernut hickory . . . . . *Carya tomentosa*

kory group B:
itternut hickory . . . . . *Carya cordiformis*
ignut hickory . . . . *Carya glabra* var. *glabra*
lack hickory . . . . . *Carya texana*

ect white oaks:
hite oak . . . . . *Quercus alba*
ur oak . . . . . *Quercus macrocarpa*
wamp chestnut oak . . . . . *Quercus michauxii*
hinkapin oak . . . . . *Quercus muehlenbergii*
wamp white oak . . . . . *Quercus bicolor*

er white oaks:
ost oak . . . . *Quercus stellata* var. *stellata*

ect red oaks:
orthern red oak . . . . . *Quercus rubra*
humard oak . *Quercus shumardii* var. *shumardii*

Red oaks:
Scarlet oak . . . . . *Quercus coccinea*
Black oak . . . . . *Quercus velutina*

Other red oaks:
Blackjack oak . . . . . *Quercus marilandica*
Water oak . . . . . *Quercus nigra*
Willow oak . . . . . *Quercus phellos*

Other hard hardwoods:
Black locust . . . . . *Robinia pseudoacacia*
Common persimmon . . . . . *Diospyros virginiana*
Flowering dogwood . . . . . *Cornus florida*
Honeylocust . . . . . *Gleditsia triacanthos*
Osage-orange . . . . . *Maclura pomifera*
Red mulberry . . . . . *Morus rubra*

SOFT HARDWOOD SPECIES

American basswood . . . . . *Tilia americana*
American sycamore . . . . *Platanus occidentalis*
Black cherry . . . . . *Prunus serotina*
Butternut . . . . . *Juglans cinerea*

Elms:
Winged elm . . . . . *Ulmus alata*
American elm . . . . . *Ulmus americana*
Slippery elm . . . . . *Ulmus rubra*
Rock elm . . . . . *Ulmus thomasii*

Soft maples:
Silver maple . . . . . *Acer saccharinum*

Sweetgum . . . . . *Liquidambar styraciflua*

Tupelo and blackgum:
Blackgum . . . . . *Nyssa sylvatica* var. *biflora*

Other soft hardwoods:
Boxelder . . . . . *Acer negundo*
Cucumbertree . . . . . *Magnolia acuminata*
Hackberry . . . . . *Celtis occidentalis*
Ohio buckeye . . . . . *Aesculus glabra*
Sassafras . . . . . *Sassafras albidum*

3/ The common and scientific names re based on "Check List of Native and xturalized Trees of the United States (Including Alaska)," by Elbert L. Little, Jr., U.S. Dep. Agric., Agric. Handb. 41, 472 p., 1953.

APPENDIX

ACCURACY OF SURVEY

Forest survey information is based on a sampling procedure designed to provide reliable statistics at the State and Survey Unit levels. Consequently, the reported figures are estimates only. However, a measure of the reliability of these figures is given by the sampling errors. These sampling errors may be interpreted as meaning that the chances are two out of three that if a 100-percent inventory had been taken, using the same methods, the results would have been within the limits indicated.

For example, the estimated area of commercial forest land in the Southwestern Ozarks Unit in 1972, 2,311.4 thousand acres, has a sampling error of ±1.8 percent (41.6 thousand acres). The commercial forest area from a 100-percent inventory, then, would be expected to fall between 2,269.8 and 2,353.0 thousand acres (2,311.4 ± 41.6), there being a one-in-three chance that this is not the case.

Following are sampling errors for total estimated volume, net growth, and removals for both growing stock and sawtimber, and for area of commercial forest land during the 1972 Southwestern Ozarks Survey:

Item	*Southwestern Ozarks Unit Totals*	*Sampling error (Percent)*
Growing Stock:		
Volume	10,772.9 M cords	3.8
Growth	321.1 M cords	5.6
Removals	406.3 M cords	9.3
Sawtimber:		
Volume	2,085.2 MM bd. ft.	4.7
Growth	54.9 MM bd. ft.	6.8
Removals	85.0 MM bd. ft.	7.4
Commercial forest land	2,311.4 M acres	1.8

As survey data are broken down into units smaller than State or Survey Unit totals, the sampling error increases. The smaller the breakdown, the larger the sampling error. For example, the sampling error for area of commercial forest land in a particular county is higher than that for total commercial forest area in the Survey Unit. An approximation of the increasing sampling error can be obtained from table 53, which shows the sampling errors associated with estimates smaller than totals in the Southwestern Ozarks Unit.

SURVEY PROCEDURE

The major steps in the survey of the Southwestern Ozarks Unit were as follows:

1. A total of 27,343 1-acre points distributed systematically across aerial photos of the entire area were observed. A photo interpreter classified these points as either forest land (15,107) or nonforest land (12,236) in order to make a preliminary estimate of forest area. Next, 5,900 of the forest points were stereoclassified as to forest type, stand-size class, and density. Then 816 points classed as forest and 682 points classed as nonforest were examined on the ground to correct the preliminary area estimate for errors in classification and for actual changes in land use since the photos were taken. Some of the points examined were locations of permanent sample plots (each of which contained one variable-radius plot with basal area factor 5) established during the 1959 survey. Of the 613 points determined to be on commercial forest land from ground examination, 245 were at previously unsampled locations and 10-point variable-radius plots (basal area factor 37.5) were established uniformly over the sample acres. The remaining 368 points were at formerly established permanent plot locations and were remeasured by superimposing 10-point variable-radius plots (basal area factor 37.5) over the existing plots in addition to remeasuring the basal area factor 5 plots. Tree measurements made on new and remeasured plots were the basis for estimates of timber volume, growth, mortality, number of trees, and other forest classifications.

2. Statistics on timber utilization in 1969 were obtained from mill surveys and from remeasurement of permanent sample plots. The Missouri Department of Conservation conducted a canvass of resident sawmills, veneer

Table 53.--*Sampling errors*[1/] *for estimates smaller than unit totals of volume, net growth, and removals, and of area of commercial forest land, Southwestern Ozarks, Missouri, 1972*

Sampling error (percent)	Commercial forest	Growing stock			Sawtimber		
		Inventory	Growth	Removals	Inventory	Growth	Removals
	Thousand acres	Thousand cords			Million board feet		
1	8,652.0						
2	2,163.0						
3	961.3						
4	540.7	11,348.0					
5	346.1	7,262.7	447.3	1,393.7	2,194.1	116.4	188.2
10	86.5	1,815.7	111.8	348.1	548.5	29.1	47.1
15	38.4	807.0	49.7	154.4	243.8	12.9	20.9
20	21.6	453.9	28.0	87.3	137.1	7.3	11.8
25	13.8	290.5	17.9	55.7	87.8	4.7	7.5
50	3.5	72.6	4.5	13.9	21.9	1.2	1.9
100	.9	18.2	1.1	3.8	5.5	.3	.5

1/ At the 68-percent probability level.

mills, and other primary wood-using plants. The North Central Forest Experiment Station canvassed resident pulpmills, and the underground mining industry in Missouri, as well as out-of-State sawmills, pulpmills, and veneer mills to determine their use of timber from Missouri. Fuelwood and fencepost output was based on U.S. Census of Agriculture and Housing figures, a canvass of public and industrial timber owners, and a canvass of resident wood-treating plants. Estimates of primary mill residue used for fuelwood were obtained from the canvass of Missouri primary wood-using plants. Timber cut for products by owner class was determined by a canvass of all public and industrial timber owners. The portion of timber cut unaccounted for by the latter owners was grouped under "farmer and other owners."

3. To develop wood utilization factors used in converting timber products output to timber removals for saw logs, veneer logs, cooperage logs, pulpwood, and charcoal wood, 486 felled trees throughout the State were measured. Factors for all other products were obtained during the 1959-1960 Missouri utilization study.

4. Field data were sent to St. Paul where they were edited, punched on cards, and stored on magnetic tape for later machine sorting, computing, and tabulation.

ALLOWABLE CUT

Allowable cut is the estimated volume of timber on commercial forest land that could be cut annually for the next 10 years, while improving tree stocking and bringing about a more even distribution of age classes. In Missouri, annual allowable cut is shown separately as that from harvest cutting and from thinnings, and was determined by computer using an area control system for determining the number of acres to be cut annually.

The harvest cut of sawtimber was calculated from stands of forest types normally managed for sawtimber whose site index and age indicated they were ready for harvest, or would be within the next 10 years. Table 54 shows the site index used in these calculations for each forest type to determine whether the objective of management would be to grow sawtimber or pulpwood. Included also is the rotation age for each.

Stands that did not qualify for harvest during that period were checked to see if they were overstocked by basal area standards, or would be within the next 10 years. Stands determined to be overstocked were "thinned" by the computer back to their recommended basal-area stocking level, and the volume of sawtimber trees "thinned" was added to the volume of allowable cut by thinnings of growing stock and sawtimber. The volume of poletimber trees "thinned" was added to the growing-stock allowable cut by thinnings. In scheduling thinnings, the computer program first "removes" rough and rotten trees, then short-log trees, and finally, growing-stock trees.

Table 54.--*Forest type, site index, and rotation age, by management objective, used in calculation of annual allowable cut, Missouri, 1972*

Forest type	Site index	Rotation age	Management objective
		Years	
Shortleaf pine	50 or higher	60	Sawtimber
	Less than 50	40	Pulpwood
Shortleaf pine-oak	60 or higher	80	Sawtimber
	Less than 60	50	Pulpwood
Eastern redcedar	35 or higher	55	Sawtimber
	Less than 35	70	Sawtimber
Eastern redcedar-hardwood	45 or higher	50	Sawtimber
	Less than 45	60	Sawtimber
Black-scarlet oak	60 or higher	80	Sawtimber
	Less than 60	50	Pulpwood
White oak	60 or higher	80	Sawtimber
	Less than 60	50	Pulpwood
Post-blackjack oak	All sites	50	Pulpwood
Oak-gum-cypress	All sites	60	Sawtimber
Cottonwood	All sites	30	Sawtimber
Elm-ash-cottonwood	All sites	50	Sawtimber
Maple-beech	All sites	90	Sawtimber

The harvest cut of growing stock included that of sawtimber in addition to the volume from stands of forest types normally managed for pulpwood that were or would be rotation age within the next 10 years.

Allowable cut is based on the assumptions that all timber will be available and accessible when needed, and that a ready market will exist for every species, size, and grade of material harvested. Further, it assumes that the proper sequence of cutting is known and will be followed, and that logging practices employed will result in an improved forest. Because there is no way of guaranteeing that these assumptions will be carried out during the next 10 years, the allowable cut estimates should be compared with timber removals figures only in a general way.

LOG GRADE

In the Southwestern Ozarks Unit the butt log of every sawtimber tree (972 trees) on every permanent sample plot was log-graded. Additionally, all of the logs in a smaller sample of trees throughout the State (265 trees) were log-graded. The volume yield by log grade for each tree in the latter sample was used to distribute the volume of trees in the former sample into log-grade classes. The resulting volumes by log-grade classes were expanded to provide an estimate for the entire unit.

Logs are graded on the basis of external characteristics as indicators of quality. Hardwood species were graded according to "Hardwood Log Grades for Standard Lumber and How to Use Them," published by the Forest Products Laboratory under the designation D1737A, 1961, and USDA Forest Service standards for hardwood tie and timber logs. The best 12-foot section of the lowest 16-foot hardwood log, or the best 12-foot upper section if the butt log did not meet minimum log-grade standards, was graded.

Shortleaf pine was graded according to "Interim Southern Pine Log Grades," USDA Forest Service, 1953. All other softwoods were graded according to "Specifications for Log Grades of Hardwoods and Softwoods," Northern Hemlock and Hardwood Association, 1947. The lowest 16-foot log in softwood trees or a shorter log down to 12 feet if a 16-foot butt log was not present, was graded.

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(Maintained in cooperation with the University of Minnesota)

Plant a tree...trees give oxygen.

GLOSSARY OF TERMS

Used in Resource Bulletins Reporting

MISSOURI'S 1972 TIMBER RESOURCE

NORTH CENTRAL FOREST EXPERIMENT STATION
FOREST SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

Land-Use Classes

Gross area.--The entire area of land and water as determined by the Bureau of Census, 1960.

Land area.--The area of dry land and land temporarily or partially covered by water such as marshes, swamps, flood plains, streams, sloughs, and estuaries. Canals less than 1/8-mile wide, and lakes, reservoirs, and ponds smaller than 40 acres are included as land area. These figures are from the Bureau of Census, 1960.

Forest land.--Land at least 16.7 percent stocked by forest trees of any size, or formerly having such tree cover, and not currently developed for nonforest use. Includes afforested areas. The minimum forest area classified was 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, and clearings in forest areas were classed as forest if less than 120 feet in width.

Commercial forest land.--Forest land that is producing or is capable of producing crops of industrial wood and that is not withdrawn from timber utilization by statute or administrative regulation. This includes areas suitable for management to grow crops of industrial wood generally of a site quality capable of producing in excess of 20 cubic feet per acre of annual growth. This includes both inaccessible and inoperable areas.

Noncommercial forest land.--(a) Unproductive--forest land incapable of yielding crops of industrial wood because of adverse site conditions, (b) Productive-reserved--forest land withdrawn from commercial timber use through statute or administrative regulation, or exclusively used for Christmas tree production.

Nonforest land.--Land that has never supported forests, and land formerly forested where forest use is precluded by development for nonforest uses, such as cropland, improved pasture, residential areas, and city parks. Also includes improved roads and adjoining rights-of-way, powerline clearings, and certain areas of water classified by the Bureau of Census as land. Unimproved roads, streams, canals, and nonforest strips in forest areas must be more than 120 feet wide, and clearings in forest areas must be more than 1 acre in size, to qualify as nonforest land.

Ownership Classes

National forest.--Federal lands that have been designated by executive order or statute as national forests or purchase units, and other lands under the administration of the USDA Forest Service.

Other Federal.--Federal lands other than national forest.

State, county, and municipal.--Lands owned by States, counties, or local public agencies, or lands leased by them for more than 50 years.

Forest industry.--Lands owned by companies or individuals operating primary wood-using plants.

Farmer-owned.--Lands owned by operators of farms. A farm must include 10 or more acres from which the sale of agricultural products totals $50 or more annually, or if less than 10 acres, the yield must be at least $250 annually.

Miscellaneous private.--Privately owned lands other than forest industry- or farmer-owned.

Tree Classes

All live trees.--Growing-stock, rough and rotten trees 1 inch d.b.h. and larger.

Growing-stock trees.--All live trees of commercial species except rough and rotten trees.

Desirable trees.--Growing-stock trees having no serious defects in quality limiting present or prospective use, and of relatively high vigor and containing no pathogens that may result in death or serious deterioration before rotation age. These are trees that would be favored by forest managers in silvicultural operations.

Acceptable trees.--Trees meeting the standards for growing stock but not qualifying as desirable trees.

Sawtimber trees.--Growing-stock trees of commercial species containing at least a 12-foot saw log or two noncontiguous saw logs, each 8 feet or longer. At least 33 percent of the gross volume of the tree must be sound wood. Softwoods must be at least 9.0 inches d.b.h. and hardwoods at least 11.0 inches.

Poletimber trees.--Growing-stock trees of commercial species at least 5.0 inches d.b.h. but smaller than sawtimber size, and of good form and vigor.

Saplings.--Live trees of commercial species 1.0 to 5.0 inches d.b.h. and of good form and vigor.

Seedlings.--Live trees of commercial species less than 1.0 inch d.b.h. that are expected to survive according to regional standards. (Examples of seedlings not expected to survive are those that are diseased or heavily damaged by logging, browsing, or fire). Only softwood seedlings over 6 inches and hardwood seedlings over 1 foot in height are counted.

Rotten trees.--Live trees (any size) of commercial species that do not contain a merchantable 12-foot saw log or two noncontiguous 8-foot or longer saw logs, now or prospectively, because of rot (that is, when more than 50 percent of the cull volume of the tree is rotten).

Rough trees.--Live trees that do not contain at least one merchantable 12-foot saw log or two noncontiguous 8-foot or longer saw logs, now or prospectively, because of roughness and poor form, as well as all live noncommercial species.

Short-log (rough trees).--Sawtimber-sized trees of commercial species that contain at least one merchantable 8- to 11-foot saw log but not a 12-foot saw log.

Stocking

The degree of utilization of land by trees as measured in terms of basal area and/or the number of trees in a stand compared to the basal area and/or number of trees required to utilize fully the growth potential of the land.

A stocking percent of 100 indicates full utilization of the site and is equivalent to 80 square feet of basal area per acre in trees 5 inches d.b.h. and larger. In a stand of trees less than 5 inches d.b.h., a stocking percent of 100 would indicate that the present number of trees is sufficient to produce 80 square feet of basal area per acre when the trees do reach 5 inches d.b.h.

Stocking of all live trees, growing-stock trees, and desirable trees are recorded separately and stands are grouped into the following stocking classes.

Stocking Classes

Overstocked stands.--Stands in which stocking of trees is 133 percent or more.

Fully stocked stands.--Stands in which stocking of trees is from 100 to 133 percent.

Medium-stocked stands.--Stands in which stocking of trees is from 60 to 100 percent.

Poorly stocked stands.--Stands in which stocking of trees is from 16.7 to 60 percent.

Nonstocked areas.--Commercial forest land on which stocking of trees is less than 16.7 percent.

Area-Condition Classes

Class 10.--Areas fully stocked with desirable trees but not overstocked.

Class 20.--Areas fully stocked with desirable trees, but overstocked with all live trees.

Class 30.--Areas medium to fully stocked with desirable trees, and with less than 30 percent of the area controlled by other trees and/or inhibiting vegetation or surface conditions that will prevent occupancy by desirable trees.

Class 40.--Areas medium to fully stocked with desirable trees and with 30 percent or more of the area controlled by other trees and/or conditions that ordinarily prevent occupancy by desirable trees.

Class 50.--Areas poorly stocked with desirable trees, but fully stocked with growing-stock trees.

Class 60.--Areas poorly stocked with desirable trees, but with medium to full stocking of growing-stock trees.

Class 70.--Areas poorly stocked with desirable trees, and poorly stocked with growing-stock trees.

Stand-Size Classes

Stand.--A growth of trees on a minimum of 1 acre of forest land that is stocked by forest trees of any size.

Sawtimber stands.--Stands at least 16.7 percent stocked with growing-stock trees, with half or more of this stocking in sawtimber or poletimber trees and with sawtimber stocking at least equal to poletimber stocking.

Poletimber stands.--Stands at least 16.7 percent stocked with growing-stock trees, and with half or more of this stocking in sawtimber and/or poletimber trees and with poletimber stocking exceeding that of sawtimber.

Sapling-seedling stands.--Stands at least 16.7 percent stocked with growing-stock trees and with saplings and/or seedlings comprising more than half of this stocking.

Nonstocked areas.--Commercial forest land on which stocking of growing-stock trees is less than 16.7 percent.

Other Classifications

Site index.--An expression of forest site quality based on the height of a free-growing dominant or codominant tree of a representative species in the forest type at age 50.

Site classes.--A classification of forest land in terms of inherent capacity to grow crops of industrial wood expressed in cubic-foot growth per acre per year.

Stand-age.--Age of the main stand. Main stand refers to trees of the dominant forest type and stand-size class.

Basal area.--The area in square feet of the cross section at breast height of a single tree. When the basal area of all the trees in a stand are summed, the result is usually expressed as square feet of basal area per acre.

Forest Types

A classification of forest land based upon the species forming a plurality of live-tree stocking. Major forest types in Missouri are:

Shortleaf pine.--Forests in which shortleaf pine comprises a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Eastern redcedar.--Forests in which eastern redcedar comprises a plurality of the stocking. (Common associates include oak and hickory.)

Eastern redcedar-hardwood.--Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking but in which eastern redcedar comprises 25 to 50 percent of the stocking. (Common associates include gum, hickory, and yellow-poplar.)

Shortleaf pine-oak.--Forests in which upland oaks comprise a plurality of the stocking, but in which shortleaf pine comprises 25 to 50 percent of the stocking.

Post-blackjack oak.--Forests in which post oak or blackjack oak, singly or in combination, comprises a plurality of the stocking except where shortleaf pine or redcedar comprises 25 to 50 percent.

Black-scarlet oak.--Forests in which upland oaks or hickory, singly or in combination, comprises a plurality of the stocking except where shortleaf pine or redcedar comprises 25 to 50 percent, or where white oak or post and blackjack oak

comprise a plurality. (Common associates include yellow-poplar, elm, maple, and black walnut.)

White oak.--Forests in which white oak and other white oak species, singly or in combination, comprise a plurality of the stocking except where shortleaf pine or redcedar comprises 25 to 50 percent.

Oak-gum-cypress.--Bottomland forests in which bottomland oaks such as pin, swamp white, and shingle oaks, along with tupelo, blackgum, sweetgum, and cypress, singly or in combination, comprise a plurality of the stocking. (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood.--Forests in which elm, ash, or cottonwood, singly or in combination, comprises a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

Cottonwood.--Forests in which cottonwood comprises a plurality of the stocking.

Maple-beech.--Forests in which hard maple or beech, singly or in combination, comprises a plurality of the stocking. (Common associates include elm and basswood.)

Timber Volume

Volume of growing stock.--The volume of sound wood in the bole of growing-stock trees 5.0 inches d.b.h. and over, from a 1-foot stump to a minimum of 4.0-inch top diameter outside bark, or to the point where the central stem breaks into limbs. Growing-stock volumes are shown in cubic feet and cords. Conversion from one unit of measure to another may be accomplished by a factor of 79 cubic feet per solid wood cord.

Volume of sawtimber.--Net volume of the saw log portion of live sawtimber trees in board feet, International 1/4-inch rule, from stump to a minimum 7 inches top diameter outside bark for softwoods and 9 inches for hardwoods.

Upper stem portion.--That part of the bole of sawtimber trees above the merchantable sawtimber top to a minimum top diameter of 4.0 inches outside bark or to the point where the central stem breaks into limbs.

Growth and Mortality

Net annual growth of growing stock.--**Net annual growth of growing stock is the change in volume of sound wood that occurred during 1971 in growing-stock trees that were 5.0 inches d.b.h. or larger at the beginning of the year,**

plus

the volume of sound wood in growing-stock trees smaller than 5.0 inches d.b.h. at the beginning of the year that grew sufficiently during the year to be reclassified into the 5.0-inch-or-larger d.b.h. classes (ingrowth),

plus

the volume of sound wood in trees that had been classified either as rough or rotten trees at the beginning of the year but were reclassified during the year as growing-stock trees,

plus

the annual change in volume of sound wood that occurred during the year on growing-stock trees that died during the year,

plus

the annual change in volume of sound wood that occurred in growing-stock trees included among timber removals for the year (See glossary for timber removals from growing stock, p. 5),

plus

the annual change in volume of sound wood in trees that had been classified as growing stock at the beginning of the year but were reclassified during the year as rough or rotten trees. Only the volume change that occurred during the portion of the years the trees were classified as growing stock was included,

minus

the volume of sound wood in growing-stock trees that died from natural causes during the year, and

minus

the volume of sound wood in trees that had been classified as growing stock at the beginning of the year, but were reclassified during the year as rough or rotten trees.

Net annual growth of sawtimber.--Net annual growth of sawtimber is the change in volume of sound wood that occurred during 1971 in trees that were sawtimber size at the beginning of the year,

plus

the volume of sound wood in growing-stock trees smaller than sawtimber size at the beginning of the year that grew sufficiently during the year to be reclassified as sawtimber trees (ingrowth),

plus

the volume of sound wood in trees that had been classified either as rough or rotten trees at the beginning of the year, but were reclassified during the year as sawtimber trees,

plus

the annual change in volume of sound wood that occurred during the year on sawtimber trees that died during the year,

plus

the annual change in volume of sound wood that occurred in sawtimber trees included among timber removals for the year (see glossary for timber removals from sawtimber, p. 5),

plus

the annual change in volume of sound wood in trees that had been classified as sawtimber trees at the beginning of the year, but were reclassified during the year as rough or rotten trees. Only the volume change that occurred during the portion of the year the trees were classified as sawtimber was included,

minus

the volume of sound wood in sawtimber trees that died from natural causes during the year, and

minus

the volume of sound wood in trees that had been classified as sawtimber trees at the beginning of the year, but were reclassified during the year as rough or rotten trees.

Mortality of growing stock.--The volume of sound wood in growing-stock trees dying annually from natural causes. Natural causes include fire, insects, disease, animal damage, weather, and suppression.

Mortality of sawtimber.--The net board-foot volume of sawtimber trees dying annually from natural causes.

Timber Removals

Timber removals from growing stock.--The volume of sound wood in growing-stock trees removed annually for forest products (including roundwood products and logging residues) and for other removals (see glossary for volume of growing stock, p. 4). Roundwood products are logs, bolts, or other round sections cut and used from trees. Logging residues are the unused portions of cut trees plus unused trees killed by logging. Other removals are growing-stock trees removed but not utilized for products or trees left standing but "removed" from the commercial forest land classification by land use change--examples are removals from cultural operations such as timber stand improvement work, land clearing, and changes in land use.

Timber removals from sawtimber.--The net board-foot volume of live sawtimber trees removed for forest products annually (including roundwood products and logging residues) and for other removals (see glossary for volume of sawtimber, p. 4).

Timber products output.--All timber products cut from roundwood, and byproducts of wood manufacturing plants. Roundwood products include logs, bolts, or other round sections cut from growing-stock trees,

cull trees, salvable dead trees, trees on nonforest land, noncommercial species, sapling-size trees, and limbwood. Byproducts from primary manufacturing plants include slabs, edgings, trimmings, miscuts, sawdust, shavings, veneer cores and clippings, and screenings of pulpmills that are used as pulp chips or other products.

Plant byproducts.--Wood products, such as pulpwood chips, obtained incidental to production of other manufactured products.

Plant residues.--Wood materials from manufacturing plants not utilized for some product.

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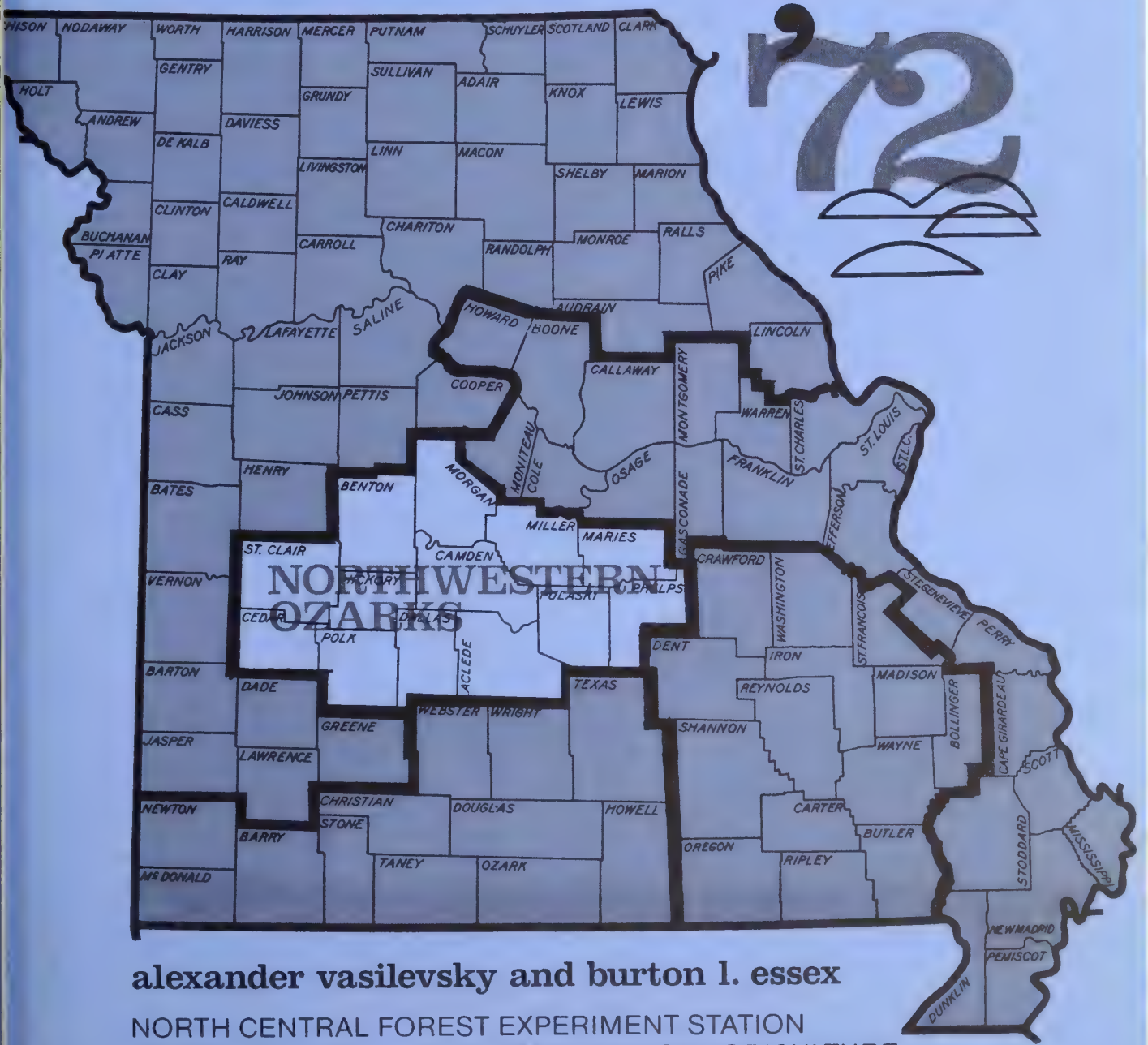

alexander vasilevsky and burton l. essex

NORTH CENTRAL FOREST EXPERIMENT STATION
FOREST SERVICE • U.S. DEPARTMENT OF AGRICULTURE

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FOREWORD

Forest Survey is a continuing endeavor as mandated by the McSweeney-McNary Forest Research Act of 1928. Its objective is to inventory periodically the Nation's forest lands to determine their extent, condition, and volumes of timber, growth, and depletions. This kind of up-to-date information is essential to frame intelligent forest policies and programs. USDA Forest Service regional experiment stations are charged with the responsibility for conducting these inventories and publishing summary reports for individual States. The North Central Forest Experiment Station is responsible for Forest Survey work done in Michigan, Wisconsin, Minnesota, North Dakota, eastern South Dakota, Nebraska, Iowa, Illinois, Indiana, Missouri, and Kansas.

Fieldwork for the 1972 Missouri Forest Survey was started in January 1970 and was completed in May 1973. Reports on the two previous surveys of Missouri's timber resource are dated 1947 and 1959. These earlier reports provide a basis for comparison with the information in this report for those interested in trends that have developed over the past quarter century.

Similar Resource Bulletins reporting statistical highlights and detailed tables on the timber resource of the other Survey Units in Missouri (see cover) are in preparation. These will provide the basis for a comprehensive analysis of the timber resource of the entire State which will be published as a separate report.

A higher degree of accuracy of survey information was obtained during the 1972 survey than otherwise would have been feasible because of intensified field sampling made possible by extra funding provided the North Central Station by the State Legislature through the Missouri Department of Conservation. The Department also conducted a canvass of primary wood-using plants in the State, which was used to help in estimating the quantity of timber products harvested in Missouri.

Personnel from the National Forests in Missouri installed sample plots on national forest lands, which were used to inventory those lands. The USDA Agricultural Stabilization and Conservation Service and the State Historical Society of Missouri furnished aerial photos used in the survey.

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N O T E

- References to information concerning growth, mortality, and removals are dated 1971, but information concerning forest area and timber inventory incorporate changes that occurred during calendar year 1971; therefore, they represent conditions as of January 1, 1972 and are dated 1972.

- Many of the terms used in this Resource Bulletin have specialized meanings, which are defined in "Glossary of Terms used in Resource Bulletins Reporting Missouri's 1972 Timber Resource." Copies of this Glossary can be obtained from the North Central Forest Experiment Station.

TIMBER RESOURCE OF MISSOURI'S NORTHWESTERN OZARKS, 1972

Alexander Vasilevsky and Burton L. Essex

HIGHLIGHTS[1/]

Forest Area

Forest land occupies 2.1 million acres (41 percent of the Unit's land area), as compared to 2.3 million acres (45 percent) in 1959.

Of this, 1.9 million acres are classified as commercial forest land as compared to 2.1 million acres in 1959.

Camden and Phelps Counties contain the Unit's largest areas of commercial forest (each having 213 thousand acres), followed by Laclede County (195 thousand acres).

The post-blackjack oak forest type (636 thousand acres) and black-scarlet oak type (630 thousand acres) dominate the commercial forest. In 1959 the post-blackjack oak type ranked third (489 thousand acres) and the black-scarlet oak type first (663 thousand acres). Nonstocked areas ranked second (649 thousand acres).

Poletimber stands make up the largest stand-size class, covering 39 percent of the commercial area, followed by sawtimber stands (30 percent), sapling and seedling stands (21 percent), and nonstocked areas (10 percent).

Farmers, private individuals, and corporations not directly engaged in timber processing own 91 percent of the commercial forest area.

Fifty-seven percent of the commercial area contains stands less than 50 years of age.

Timber Volume

Volume of growing stock increased from 626 million cubic feet in 1959 to 679 million in 1972.

Sawtimber volume gained from 1.3 billion board feet in 1959 to 1.6 billion in 1972.

Oak species account for 82 percent of the growing-stock volume.

Volume per acre of growing stock averaged 354 cubic feet (4.5 cords) in 1972, as compared to 292 cubic feet (3.7 cords) in 1959.

Farmers, private individuals, and corporations not directly engaged in timber processing own 89 percent of the volume of growing stock.

Volume in living rough and rotten trees is 526 million cubic feet (3.5 cords per acre), most of which is in rough trees.

1/ Published 1959 statistics have been adjusted to be comparable with 1972 data because of changed definitions and procedures used during the two surveys.

Short-log trees account for 78 million cubic feet of the total rough and rotten tree volume.

Stand Conditions

The net annual growth on growing-stock trees totaled 17 million cubic feet (212 thousand cords) in 1971.

The growth rate of growing stock was 2.5 percent of inventory volume.

Mortality of growing-stock trees in 1971 amounted to 739 thousand cubic feet (9 thousand cords), which principally was attributed to disease.

Three-fourths of the commercial forest area is not capable of growing 50 cubic feet or more of wood per acre per year.

Fifty-seven percent of the commercial forest contains stands less than 50 years old.

Two-thirds of the commercial forest is capable of growing trees 50 feet and taller at age 50, but only 10 percent is capable of growing trees 70 feet and taller at the same age.

Seventy-five percent of the commercial forest is poorly stocked with growing-stock trees, but only 10 percent is nonstocked with them. (See glossary for nonstocked areas, page 2.)

Timber Use

Growing-stock removals totaled 13 million cubic feet (160 thousand cords) in 1971, compared to growing-stock net annual growth of 17 million cubic feet (212 thousand cords) (see glossary for timber removals, page 5).

Forty-one percent of the volume of growing-stock removals is classed as "other" removals; therefore, it is not utilized (see glossary for timber removals, page 5).

The output of timber products in 1969 amounted to 15 million cubic feet; principally as fuelwood (33 percent), charcoal wood (30 percent), and saw logs (26 percent).

The volume of primary plant residues in 1969 totaled 1.1 million cubic feet, of which 35 percent is not used.2/

Allowable Cut

Average annual allowable cut from growing stock for the period 1972-1981 is estimated to be 17 million cubic feet (215 thousand cords)--16 million cubic feet from harvest cuttings and 1 million cubic feet from thinnings.

During the same period, an additional annual allowable cut from rough and rotten trees (nongrowing stock) is estimated to be 11 million cubic feet (143 thousand cords).

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10. Area of commercial forest land, by forest type and site index class.

2/ Primary plants are those using logs and bolts or chips, shavings, etc., from logs and bolts.

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Table 1.--*Area of land by land class, Northwestern Ozarks, Missouri, 1959 and 1972*

(Thousand acres)

Land class	1959[1/]	1972
Commercial forest land:		
Eastern redcedar type	0.70	4.00
Eastern redcedar-hardwood type	15.16	38.50
Post-blackjack oak type	489.01	636.00
Black-scarlet oak type	663.45	630.50
White oak type	226.22	338.90
Elm-ash-cottonwood type	91.33	64.10
Maple-beech type	11.10	11.10
Nonstocked	649.29	196.90
Subtotal	2,146.26	1,920.00
Noncommercial forest land:		
Unproductive	116.58	77.40
Productive-reserved	14.70	73.60
Subtotal	131.28	151.00
Nonforest land	2,781.14	2,958.50
Total	5,058.68	5,029.50

1/ Figures have been adjusted from those published previously for 1959 to conform to 1972 land classes because of changes in survey definitions and procedures.

Table 2.--*Area of land and forest land, by county, Northwestern Ozarks, Missouri, 1972*

County	Land area	Forest land			Commercial forest as a percent of land area
		All forest	Noncommercial	Commercial	
	Thousand acres				Percent
Benton	470.5	200.2	33.6	166.6	35
Camden	409.6	230.9	17.6	213.3	52
Cedar	317.4	81.1	8.9	72.2	23
Dallas	343.7	131.2	5.0	126.2	37
Hickory	254.0	108.0	8.0	100.0	39
Laclede	492.8	204.2	9.0	195.2	40
Maries	335.8	143.6	6.5	137.1	41
Miller	384.0	165.4	13.0	152.4	40
Morgan	379.0	166.7	4.5	162.2	43
Phelps	433.3	221.1	8.4	212.7	49
Polk	410.9	87.1	3.7	83.4	20
Pulaski	352.3	183.5	7.9	175.6	50
St. Clair	446.2	148.0	24.9	123.1	28
All counties	5,029.5	2,071.0	151.0	1,920.0	38

Table 3.--*Area of commercial forest land for Missouri's Northwestern Ozarks Survey Unit and for individual counties within Unit, by forest type and stand-size class, 1972*

(Thousand acres)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
ALL COUNTIES					
Eastern redcedar	4.0	--	4.0	--	--
Eastern redcedar-hardwood	38.5	.8	--	37.7	--
Post-blackjack oak	636.0	134.9	344.6	156.5	--
Black-scarlet oak	630.5	249.4	239.6	141.5	--
White oak	338.9	134.8	163.6	40.5	--
Elm-ash-cottonwood	64.1	52.7	--	11.4	--
Maple-beech	11.1	--	--	11.1	--
Nonstocked 1/	196.9	--	--	--	196.9
All forest types	1,920.0	572.6	751.8	398.7	196.9
BENTON COUNTY					
Eastern redcedar	.2	--	.2	--	--
Eastern redcedar-hardwood	3.1	--	--	3.1	--
Post-blackjack oak	52.5	12.6	27.9	12.0	--
Black-scarlet oak	54.2	23.1	19.5	11.6	--
White oak	29.7	12.5	13.7	3.5	--
Elm-ash-cottonwood	7.5	6.0	--	1.5	--
Maple-beech	1.1	--	--	1.1	--
Nonstocked 1/	18.3	--	--	--	18.3
All forest types	166.6	54.2	61.3	32.8	18.3
CAMDEN COUNTY					
Eastern redcedar	.7	--	.7	--	--
Eastern redcedar-hardwood	4.3	--	--	4.3	--
Post-blackjack oak	69.3	15.7	38.1	15.5	--
Black-scarlet oak	72.4	28.8	25.6	18.0	--
White oak	37.6	15.5	17.9	4.2	--
Elm-ash-cottonwood	5.0	4.2	--	.8	--
Maple-beech	1.5	--	--	1.5	--
Nonstocked 1/	22.5	--	--	--	22.5
All forest types	213.3	64.2	82.3	44.3	22.5
CEDAR COUNTY					
Eastern redcedar-hardwood	1.5	--	--	1.5	--
Post-blackjack oak	22.1	5.6	11.4	5.1	--
Black-scarlet oak	23.4	10.0	8.2	5.2	--
White oak	12.4	5.4	5.6	1.4	--
Elm-ash-cottonwood	3.6	3.1	--	.5	--
Maple-beech	.5	--	--	.5	--
Nonstocked 1/	8.7	--	--	--	8.7
All forest types	72.2	24.1	25.2	14.2	8.7
DALLAS COUNTY					
Eastern redcedar-hardwood	2.9	.4	--	2.5	--
Post-blackjack oak	40.2	9.4	21.5	9.3	--
Black-scarlet oak	41.7	17.2	15.2	9.3	--
White oak	22.3	9.3	10.4	2.6	--
Elm-ash-cottonwood	4.9	4.4	--	.5	--
Maple-beech	.8	--	--	.8	--
Nonstocked 1/	13.4	--	--	--	13.4
All forest types	126.2	40.7	47.1	25.0	13.4

1/See glossary for stand-size classes (page 3). (Table 3 cont. on next page)

(Table 3 cont.)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
HICKORY COUNTY					
Eastern redcedar-hardwood	1.9	--	—	1.9	--
Post-blackjack oak	31.7	7.6	16.8	7.3	--
Black-scarlet oak	33.2	14.1	12.0	7.1	--
White oak	17.9	7.4	8.3	2.2	--
Elm-ash-cottonwood	4.1	3.8	—	.3	--
Maple-beech	.6	--	--	.6	--
Nonstocked 1/	10.6	—	—	--	10.6
All forest types	100.0	32.9	37.1	19.4	10.6
LACLEDE COUNTY					
Eastern redcedar	.4	--	.4	--	--
Eastern redcedar-hardwood	4.5	.4	--	4.1	--
Post-blackjack oak	67.8	12.7	35.8	19.3	--
Black-scarlet oak	62.9	24.3	23.4	15.2	--
White oak	33.5	13.3	16.3	3.9	
Elm-ash-cottonwood	5.0	3.8	--	1.2	--
Maple-beech	1.0	--	—	1.0	--
Nonstocked 1/	20.1	--	--	--	20.1
All forest types	195.2	54.5	75.9	44.7	20.1
MARIES COUNTY					
Eastern redcedar-hardwood	3.3	--	—	3.3	--
Post-blackjack oak	48.6	8.9	27.7	12.0	--
Black-scarlet oak	45.2	14.6	18.9	11.7	--
White oak	24.3	8.9	12.3	3.1	--
Elm-ash-cottonwood	3.1	1.9	--	1.2	--
Maple-beech	.5	--	--	.5	--
Nonstocked 1/	12.1	--	--	--	12.1
All forest types	137.1	34.3	58.9	31.8	12.1
MILLER COUNTY					
Eastern redcedar-hardwood	3.0	--	—	3.0	--
Post-blackjack oak	50.6	10.3	28.4	11.9	--
Black-scarlet oak	48.8	18.9	19.3	10.6	--
White oak	27.8	10.9	13.5	3.4	--
Elm-ash-cottonwood	5.7	4.6	--	1.1	--
Maple-beech	.8	—	—	.8	--
Nonstocked 1/	15.7	--	--	--	15.7
All forest types	152.4	44.7	61.2	30.8	15.7
MORGAN COUNTY					
Eastern redcedar	.5	--	.5	--	--
Eastern redcedar-hardwood	2.5	—	--	2.5	--
Post-blackjack oak	53.5	12.8	29.0	11.7	--
Black-scarlet oak	55.5	23.7	21.7	10.1	--
White oak	30.3	11.4	14.9	4.0	--
Elm-ash-cottonwood	3.7	3.2	--	.5	--
Maple-beech	1.0	--	--	1.0	--
Nonstocked 1/	15.2	--	--	--	15.2
All forest types	162.2	51.1	66.1	29.8	15.2

1/See glossary for stand-size classes (page 3)

(Table 3 cont. on next page)

(Table 3 cont.)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
PHELPS COUNTY					
Eastern redcedar	1.1	--	1.1	--	--
Eastern redcedar-hardwood	3.7	--	--	3.7	--
Post-blackjack oak	76.1	13.3	41.6	21.2	--
Black-scarlet oak	71.9	26.8	30.1	15.0	--
White oak	37.8	13.8	19.4	4.6	--
Elm-ash-cottonwood	3.4	2.4	--	1.0	--
Maple-beech	1.0	--	--	1.0	--
Nonstocked 1/	17.7	--	--	--	17.7
All forest types	212.7	56.3	92.2	46.5	17.7
POLK COUNTY					
Eastern redcedar	1.1	--	1.1	--	--
Eastern redcedar-hardwood	1.9	--	--	1.9	--
Post-blackjack oak	25.5	5.3	14.3	5.9	--
Black-scarlet oak	25.4	10.1	9.6	5.7	--
White oak	13.9	5.5	6.8	1.6	--
Elm-ash-cottonwood	4.5	3.9	--	.6	--
Maple-beech	.5	--	--	.5	--
Nonstocked 1/	10.6	--	--	--	10.6
All forest types	83.4	24.8	31.8	16.2	10.6
PULASKI COUNTY					
Eastern redcedar-hardwood	3.5	--	--	3.5	--
Post-blackjack oak	60.9	11.6	32.8	16.5	--
Black-scarlet oak	57.7	21.3	22.5	13.9	--
White oak	30.2	11.6	15.0	3.6	--
Elm-ash-cottonwood	5.2	4.4	--	.8	--
Maple-beech	1.0	--	--	1.0	--
Nonstocked 1/	17.1	--	--	--	17.1
All forest types	175.6	48.9	70.3	39.3	17.1
ST. CLAIR COUNTY					
Eastern redcedar-hardwood	2.4	--	--	2.4	--
Post-blackjack oak	37.2	9.1	19.3	8.8	--
Black-scarlet oak	38.2	16.5	13.6	8.1	--
White oak	21.2	9.3	9.5	2.4	
Elm-ash-cottonwood	8.4	7.0	--	1.4	--
Maple-beech	.8	--	--	.8	--
Nonstocked 1/	14.9	--	--	--	14.9
All forest types	123.1	41.9	42.4	23.9	14.9

1/See glossary for stand-size classes (page 3)

Table 4.--*Area of commercial forest land, by county and ownership class, Northwestern Ozarks, Missouri, 1972*

(Thousand acres)

County	All ownerships	National Forest	Other federal	State, county and municipal	Forest industry	Farmer and miscellaneous private
Benton	166.6	--	--	.9	.4	165.3
Camden	213.3	--	--	--	--	213.3
Cedar	72.2	--	--	.3	--	71.9
Dallas	126.2	--	--	1.6	--	124.6
Hickory	100.0	--	--	--	--	100.0
Laclede	195.2	25.5	.8	1.7	.1	167.1
Maries	137.1	--	--	.3	--	136.8
Miller	152.4	--	--	--	--	152.4
Morgan	162.2	--	--	.9	--	161.3
Phelps	212.7	50.6	--	.2	.2	161.7
Polk	83.4	--	--	.5	--	82.9
Pulaski	175.6	38.0	41.2	.2	--	96.2
St. Clair	123.1	--	--	1.9	--	121.2
All counties	1,920.0	114.1	42.0	8.5	.7	1,754.7

Table 5.--*Area of commercial forest land, by stand-volume and ownership class, Northwestern Ozarks, Missouri, 1972*

(Thousand acres)

Stand volume per acre[1/] (board feet)	All ownerships	National Forest	Other federal	State, county and municipal	Forest industry	Farmer and miscellaneous private
Less than 1,500	1,583.2	78.1	33.6	8.5	.7	1,462.3
1,500 to 5,000	320.8	36.0	8.4	--	--	276.4
More than 5,000	16.0	--	--	--	--	16.0
All classes	1,920.0	114.1	42.0	8.5	.7	1,754.7

1/ International 1/4-inch rule.

Table 6.--*Area of commercial forest land, by area-condition and ownership class, Northwestern Ozarks, Missouri, 1972*

(Thousand acres)

Area-condition class[1/]	All ownerships	National Forest	Other federal	State, county and municipal	Forest industry	Farmer and miscellaneous private
50	11.0	--	5.8	--	--	5.2
60	289.1	71.8	12.9	1.3	--	203.1
70	1,619.9	42.3	23.3	7.2	.7	1,546.4
All classes	1,920.0	114.1	42.0	8.5	.7	1,754.7

1/ See glossary for area-condition classes (page 2).

Table 7.--*Area of commercial forest land, by site and ownership class, Northwestern Ozarks, Missouri, 1972*

(Thousand acres)

Site class (cubic feet of growth per acre per year)	All ownerships	National Forest	Other federal	State, county and municipal	Forest industry	Farmer and miscellaneous private
85-119	66.1	--	--	1.3	--	64.8
50-84	353.6	10.4	12.4	2.6	--	328.2
Less than 50	1,500.3	103.7	29.6	4.6	.7	1,361.7
All classes	1,920.0	114.1	42.0	8.5	.7	1,754.7

Table 8.--*Area of commercial forest land, by forest type and ownership class, Northwestern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type	All ownerships	National Forest[1/]	Other federal	State, county and municipal	Forest industry	Farmer and miscellaneous private
Eastern redcedar	4.0	--	--	--	--	4.0
Eastern redcedar-hardwood	38.5	--	--	--	--	38.5
Post-blackjack oak	636.0	10.9	12.5	2.5	.4	609.7
Black-scarlet oak	630.5	79.6	5.5	5.1	--	540.3
White oak	338.9	17.4	--	--	.3	321.2
Elm-ash-cottonwood	64.1	4.4	12.4	.9	--	46.4
Maple-beech	11.1	--	--	--	--	11.1
Nonstocked[2/]	196.9	1.8	11.6	--	--	183.5
All forest types	1,920.0	114.1	42.0	8.5	.7	1,754.7

1/ Estimates of area of some forest types for National Forest owner differ from those shown in current timber management plans for the National Forests in Missouri.

2/ See glossary for stand-size classes (page 3).

Table 9.—*Area of commercial forest land, by forest type and stand-age class, Northwestern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type	All ages	Stand-age class (years)											
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-119	120+
Eastern redcedar	4.0	--	--	--	--	--	2.0	2.0	--	--	--	--	--
Eastern redcedar-hardwood	38.5	10.3	27.4	--	--	--	.4	.4	--	--	--	--	--
Post-blackjack oak	636.0	72.1	77.6	51.5	115.6	102.5	80.1	50.1	21.6	21.7	32.4	10.8	--
Black-scarlet oak	630.5	70.8	65.4	40.3	60.2	93.7	105.1	84.4	33.2	22.1	38.7	16.6	--
White oak	338.9	11.5	29.1	17.2	29.2	69.1	41.6	62.7	44.7	17.0	11.2	--	5.6
Elm-ash-cottonwood	64.1	3.8	3.8	3.8	--	17.6	11.6	17.8	--	5.7	--	--	--
Maple-beech	11.1	5.5	--	--	--	--	--	5.6	--	--	--	--	--
Nonstocked[1/]	196.9	82.1	32.7	5.6	5.4	--	16.6	21.8	11.1	10.7	10.9	--	--
All forest types	1,920.0	256.1	236.0	118.4	210.4	282.9	257.4	244.8	110.6	77.2	93.2	27.4	5.6

1/ See glossary for stand-size classes (page 3).

Table 10.--*Area of commercial forest land, by forest type and site-index class, Northwestern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type	All classes	Site-index class (height in feet at 50 years)							
		20-29	30-39	40-49	50-59	60-69	70-79	80-89	90+
Eastern redcedar	4.0	--	2.0	2.0	--	--	--	--	--
Eastern redcedar-hardwood	38.5	5.2	15.8	6.0	11.1	--	.4	--	--
Post-blackjack oak	636.0	10.8	85.3	213.4	205.8	74.0	34.4	12.3	--
Black-scarlet oak	630.5	--	5.7	122.0	231.4	193.3	66.7	11.4	--
White oak	338.9	--	17.2	75.2	172.7	73.8	--	--	--
Elm-ash-cottonwood	64.1	--	--	3.8	3.8	17.6	17.8	11.4	9.7
Maple-beech	11.1	--	--	--	11.1	--	--	--	--
Nonstocked[1/]	196.9	5.4	16.4	82.0	26.9	44.0	5.9	11.0	5.3
All forest types	1,920.0	21.4	142.4	504.4	662.8	402.7	125.2	46.1	15.0

1/ See glossary for stand-size classes (page 3).

Table 11.—*Area of commercial forest land, by forest type and basal-area class, Northwestern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type	All classes	Basal-area class (square feet per acre)						
		0-19	20-39	40-59	60-79	80-99	100-119	120-139
Eastern redcedar	4.0	--	--	--	2.0	2.0	--	--
Eastern redcedar-hardwood	38.5	11.1	5.6	10.3	11.1	.4	--	--
Post-blackjack oak	636.0	19.3	51.9	192.8	212.9	113.4	40.3	5.4
Black-scarlet oak	630.5	11.0	60.0	217.7	233.7	102.3	5.8	--
White oak	338.9	--	17.1	108.7	133.0	34.5	40.0	5.6
Elm-ash-cottonwood	64.1	--	5.7	17.3	5.7	23.5	11.9	--
Maple-beech	11.1	5.6	--	5.5	--	--	--	--
Nonstocked[1/]	196.9	10.9	76.2	82.4	27.4	--	--	--
All forest types	1,920.0	57.9	216.5	634.7	625.8	276.1	98.0	11.0

1/ See glossary for stand-size classes (page 3).

Table 12.--*Area of commercial forest land, by forest type, stand-size and site class, Northwestern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type and stand-size class	All site classes	85 to 120 cu. ft.	50 to 85 cu. ft.	Less than 50 cu. ft.
Eastern redcedar				
Sawtimber	--	--	--	--
Poletimber	4.0	--	--	4.0
Sapling and seedling	--	--	--	--
All stands	4.0	--	--	4.0
Eastern redcedar-hardwood				
Sawtimber	.8	--	.4	.4
Poletimber	--	--	--	--
Sapling and seedling	37.7	--	--	37.7
All stands	38.5	--	.4	38.1
Post-blackjack oak				
Sawtimber	134.9	--	10.8	124.1
Poletimber	344.6	5.9	51.7	287.0
Sapling and seedling	156.5	--	29.4	127.1
All stands	636.0	5.9	91.9	538.2
Black-scarlet oak				
Sawtimber	249.5	11.2	72.0	166.3
Poletimber	239.5	5.8	66.3	167.4
Sapling and seedling	141.5	--	49.1	92.4
All stands	630.5	17.0	187.4	426.1
White oak				
Sawtimber	134.7	--	5.5	129.2
Poletimber	163.7	--	11.8	151.9
Sapling and seedling	40.5	--	5.7	34.8
All stands	338.9	--	23.0	315.9
Elm-ash-cottonwood				
Sawtimber	52.7	23.3	17.8	11.6
Poletimber	--	--	--	--
Sapling and seedling	11.4	3.8	--	7.6
All stands	64.1	27.1	17.8	19.2
Maple-beech				
Sawtimber	--	--	--	--
Poletimber	--	--	--	--
Sapling and seedling	11.1	--	--	11.1
All stands	11.1	--	--	11.1
Nonstocked[1/]	196.9	16.2	33.1	147.6
Total all types	1,920.0	66.2	353.6	1,500.2

1/ See glossary for stand-size classes (page 3).

Table 13.--*Area of commercial forest land, by stocking class based on selected stand components, Northwestern Ozarks, Missouri, 1972*

(Thousand acres)

Stocking percentage	Stocking classified in terms of					
	All trees	Growing-stock trees			Rough and rotten trees	Inhibiting vegetation
		Total	Desirable	Acceptable		
130+	33.8	--	--	--	--	--
120-129	94.7	--	--	--	5.4	--
110-119	170.3	--	--	--	--	--
100-109	405.4	11.0	--	5.6	22.8	--
90-99	457.4	9.7	--	9.7	17.4	--
80-89	446.1	73.0	--	40.0	84.2	--
70-79	157.7	81.1	--	75.0	211.6	--
60-69	105.1	107.9	--	124.4	374.4	--
50-59	38.7	309.5	--	297.9	383.5	--
40-49	5.4	268.1	5.4	274.0	406.1	--
30-39	5.4	406.6	5.9	418.0	213.6	
20-29	--	372.4	5.6	372.2	134.9	--
10-19	--	172.2	10.7	194.7	60.6	--
0-9	--	108.5	1,892.4	108.5	5.5	1,920.0
Total	1,920.0	1,920.0	1,920.0	1,920.0	1,920.0	1,920.0

Table 14.--*Area of commercial forest land, by stocking class of growing-stock trees and stand-size class, Northwestern Ozarks, Missouri, 1972*

(Thousand acres)

Stocking percentage	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas 1/
101 to 133	11.0	5.4	--	5.6	--
61 to 100	271.6	95.1	135.4	41.1	--
17 to 60	1,436.7	472.1	616.4	348.2	--
Less than 17	200.7	--	--	3.8	196.9
All classes	1,920.0	572.6	751.8	398.7	196.9

1/ See glossary for stand-size classes (page 3).

Table 15.--*Area of noncommercial forest land, by ownership class, Northwestern Ozarks, Missouri, 1972*

(Thousand acres)

Ownership class	All areas	Productive-reserved areas	Unproductive areas
National Forest	1.9	--	1.9
Other public	83.8	73.6	10.2
Farmer and miscellaneous private	65.3	--	65.3
All ownerships	151.0	73.6	77.4

Table 16.--*Area of noncommercial forest land, by forest type, Northwestern Ozarks, Missouri, 1972*

(Thousand acres)

Forest type	All areas	Productive-reserved areas	Unproductive areas
Eastern redcedar	7.6	--	7.6
Eastern redcedar-hardwood	23.5	--	23.5
Post-blackjack oak	47.7	27.0	20.7
Black-scarlet oak	19.1	14.0	5.1
White oak	48.5	28.0	20.5
Elm-ash-cottonwood	4.6	4.6	--
All forest types	151.0	73.6	77.4

Table 17.—*Number of all live trees on commercial forest land, by species and diameter class, Northwestern Ozarks, Missouri, 1972*

(Thousand trees)

Species	All classes	Diameter class (inches at breast height)													
		1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods:															
Shortleaf pine	350	--	--	119	46	--	93	52	14	26	--	--	--	--	--
Eastern redcedar	23,260	19,645	1,853	1,024	369	290	71	8	--	--	--	--	--	--	--
Total softwoods	23,610	19,645	1,853	1,143	415	290	164	60	14	26	--	--	--	--	--
Hardwoods:															
Select white oaks	144,118	74,859	25,105	13,500	12,377	7,824	4,497	3,359	1,288	670	273	141	185	40	--
Other white oaks	226,597	110,236	55,533	32,146	12,517	7,982	3,660	2,248	1,273	489	271	151	86	5	--
Select red oaks	13,211	5,597	1,732	1,469	1,418	1,210	604	562	382	99	49	34	55	--	--
Red oaks	165,060	85,835	30,337	18,989	10,932	7,150	5,057	3,037	1,759	934	463	268	251	48	--
Other red oaks	67,879	37,254	16,207	7,310	3,572	1,770	934	356	193	147	78	34	24	--	--
Hickory A	54,986	42,807	5,388	3,325	1,715	971	442	159	74	76	29	--	--	--	--
Hickory B	120,840	86,708	20,970	7,060	3,667	1,476	531	223	142	37	20	--	6	--	--
Hard maple	4,678	4,265	--	324	--	85	--	--	--	--	--	--	--	4	--
Soft maple	3,534	1,739	1,186	263	160	--	31	60	50	14	31	--	--	--	--
Tupelo and blackgum	1,360	1,144	--	--	49	119	--	--	32	12	--	--	--	4	--
Ash	19,292	12,922	4,333	750	500	451	231	67	18	11	--	9	--	--	--
Sycamore	3,157	1,142	--	581	403	310	255	209	130	64	--	24	25	9	5
River birch	42	--	--	--	--	--	--	--	16	11	9	--	6	--	--
Black walnut	9,363	3,850	1,964	1,303	1,305	440	311	101	60	13	--	9	7	--	--
Black cherry	2,353	1,671	169	299	182	--	--	--	--	12	20	--	--	--	--
Elm	41,144	29,589	8,163	2,357	669	153	80	63	13	36	21	--	--	--	--
Other hardwoods	120,070	103,851	11,313	2,608	1,266	576	137	211	62	37	--	--	6	3	--
Noncommercial species	30,857	28,328	2,192	337	--	--	--	--	--	--	--	--	--	--	--
Total hardwoods	1,028,541	631,797	184,592	92,621	50,732	30,517	16,770	10,655	5,492	2,662	1,264	670	651	113	5
All species	1,052,151	651,442	186,445	93,764	51,147	30,807	16,934	10,715	5,506	2,688	1,264	670	651	113	5

Table 18.--*Number of growing-stock trees on commercial forest land, by species and diameter class, Northwestern Ozarks, Missouri, 1972*

(Thousand trees)

Species	All classes	Diameter class (inches at breast height)												
		1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0+
Softwoods:														
Shortleaf pine	350	--	--	119	46	--	93	52	14	26	--	--	--	--
Eastern redcedar	20,462	17,471	1,854	674	271	153	39	--	--	--	--	--	--	--
Total softwoods	20,812	17,471	1,854	793	317	153	132	52	14	26	--	--	--	--
Hardwoods:														
Select white oaks	63,845	27,059	14,009	5,748	6,852	4,696	2,337	2,050	702	208	97	51	27	9
Other white oaks	74,256	29,668	16,157	16,029	6,178	3,364	1,406	988	282	133	19	24	8	--
Select red oaks	5,439	1,659	589	737	848	692	355	266	198	33	11	26	25	--
Red oaks	78,665	33,809	15,635	12,652	7,515	3,672	2,540	1,434	729	380	153	71	59	16
Other red oaks	12,368	6,100	3,215	1,705	745	315	122	83	32	13	18	8	12	--
Hickory A	20,605	16,009	724	1,977	879	582	206	95	60	64	9	--	--	--
Hickory B	38,144	22,278	8,860	3,994	1,803	733	278	124	46	12	10	--	6	--
Hard maple	2,312	2,212	--	100	--	--	--	--	--	--	--	--	--	--
Soft maple	2,207	593	1,186	263	113	--	31	--	--	--	21	--	--	--
Tupelo and blackgum	727	557	--	--	49	73	--	--	31	13	--	--	--	4
Ash	3,049	1,773	577	152	197	208	111	23	--	--	--	8	--	--
Sycamore	1,855	--	--	581	351	310	255	146	129	38	--	16	20	9
River birch	9	--	--	--	--	--	--	--	--	--	9	--	--	--
Black walnut	2,210	--	530	748	493	196	145	70	16	12	--	--	--	--
Black cherry	266	--	169	85	--	--	--	--	--	12	--	--	--	--
Elm	8,114	5,287	1,908	456	341	75	--	22	13	12	--	--	--	--
Other hardwoods	4,811	2,203	1,743	339	129	222	85	78	--	12	--	--	--	--
Total hardwoods	318,882	149,207	65,302	45,566	26,493	15,138	7,871	5,379	2,238	942	347	204	157	38
All species	339,694	166,678	67,156	46,359	26,810	15,291	8,003	5,431	2,252	968	347	204	157	38

Table 19.—*Number of short-log trees on commercial forest land, by species and diameter class, Northwestern Ozarks, Missouri, 1972*

(Thousand trees)

Species	All classes	Diameter class (inches at breast height)								
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	20.9-22.9	23.0-28.9	29.0+
Softwoods:										
Eastern redcedar	22	15	--	7	--	--	--	--	--	--
Total softwoods	22	15	--	7	--	--	--	--	--	--
Hardwoods:										
Select white oaks	1,580	--	823	401	156	108	40	17	26	9
Other white oaks	1,196	--	590	408	151	12	19	16	--	--
Select red oaks	80	--	48	--	32	--	--	--	--	--
Red oaks	1,343	--	579	370	275	69	30	16	--	4
Other red oaks	248	--	167	38	--	26	11	--	6	--
Hickory A	82	--	49	21	--	12	--	--	--	--
Hickory B	129	--	57	--	47	25	--	--	--	--
Ash	50	--	26	24	--	--	--	--	--	--
Sycamore	58	--	--	45	--	--	--	8	5	--
Black walnut	77	--	55	--	14	--	--	--	8	--
Black cherry	20	--	--	--	--	--	20	--	--	--
Elm	43	--	--	20	--	13	10	--	--	--
Other hardwoods	34	--	--	21	--	13	--	--	--	--
Total hardwoods	4,940	--	2,394	1,348	675	278	130	57	45	13
All species	4,962	15	2,394	1,355	675	278	130	57	45	13

Table 20.--*Net volume of growing stock and sawtimber on commercial forest land, by species, Northwestern Ozarks, Missouri, 1959 and 1972*

Species	Growing stock		Sawtimber	
	1959[1/]	1972	1959[1/]	1972
	Million cubic feet		Million board feet[2/]	
Softwoods:				
Shortleaf pine	[3/] --	4.2	[3/] --	25.7
Eastern redcedar	2.1	3.8	.8	9.6
Other softwoods	1.4	--	8.4	--
Total softwoods	3.5	8.0	9.2	35.3
Hardwoods:				
Select white oaks	180.8	184.6	393.3	488.1
Other white oaks	129.4	132.2	236.0	211.8
Select red oaks	24.6	31.3	97.5	96.8
Red oaks	192.5	196.8	455.0	485.2
Other red oaks	9.0	13.9	22.2	30.6
Hickory A	12.0	22.1	24.0	39.9
Hickory B	19.5	29.2	14.0	34.0
Hard maple	[3/] --	.3	--	--
Soft maple	[3/] --	3.0	[3/] --	8.4
Tupelo and blackgum	[3/] --	2.9	[3/] --	8.6
Ash	2.9	5.8	10.4	12.4
Sycamore	19.0	28.0	19.6	89.0
River birch	[3/] --	.5	[3/] --	3.2
Basswood	.9	--	--	--
Black walnut	14.2	9.3	31.2	18.3
Black cherry	1.4	.7	[3/] --	2.0
Elm	11.2	4.3	4.9	5.9
Other hardwoods	5.3	5.9	4.2	14.6
Total hardwoods	622.7	670.8	1,312.3	1.548.8
All species	626.2	678.8	1,321.5	1,584.1

1/ Figures have been adjusted from those published previously for 1959 to conform to 1972 volumes because of changes in survey definitions and procedures.

2/ International 1/4-inch rule.

3/ Some species are shown as having no volume in 1959, but as having volume in 1972. This situation results from the sparseness of trees of those species and the resulting low chance of their being sampled. In 1959 no trees of those species were encountered, but in 1972 some were sampled. Sampling errors, which provide a measure of the reliability of estimates, increase as the size of the population being sampled decreases. (See Accuracy of Survey in Appendix)

Table 21.—*Net volume on commercial forest land for Missouri's Northwestern Ozarks Survey Unit and for individual counties within Unit, by species and kind of material, 1972*

ALL COUNTIES

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Shortleaf pine	52.3	6.4	45.9	25.7	5.6	20.1	--
Eastern redcedar	48.0	28.4	19.6	9.6	.2	9.4	20.9
Total softwoods	100.3	34.8	65.5	35.3	5.8	29.5	20.9
Hardwoods:							
Select white oaks	2,337.0	1,063.4	1,273.6	488.1	336.9	151.2	1,579.9
Other white oaks	1,673.0	1,124.9	548.1	211.8	134.6	77.2	1,724.2
Select red oaks	395.7	146.4	249.3	96.8	55.3	41.5	202.4
Red oaks	2,492.8	1,244.4	1,248.4	485.2	310.4	174.8	1,678.5
Other red oaks	176.9	105.2	71.7	30.6	22.4	8.2	493.9
Hickory A	278.4	168.4	110.0	39.9	27.7	12.2	151.4
Hickory B	368.9	273.7	95.2	34.0	14.8	19.2	259.3
Hard maple	3.2	3.2	--	--	--	--	12.4
Soft maple	38.7	19.1	19.6	8.4	8.4	--	41.2
Tupelo and blackgum	37.5	13.6	23.9	8.6	5.5	3.1	1.4
Ash	73.4	38.6	34.8	12.4	10.8	1.6	76.6
Sycamore	354.4	97.9	256.5	89.0	86.5	2.5	42.2
River birch	5.7	--	5.7	3.2	3.2	--	8.0
Black walnut	117.4	73.8	43.6	18.3	3.5	14.8	106.8
Black cherry	8.1	3.2	4.9	2.0	2.0	--	24.9
Elm	54.1	37.7	16.4	5.9	5.9	--	89.7
Other hardwoods	75.3	41.4	33.9	14.6	11.9	2.7	135.4
Noncommercial species	--	--	--	--	--	--	5.3
Total hardwoods	8,490.5	4,454.9	4,035.6	1,548.8	1,039.8	509.0	6,633.5
All species	8,590.8	4,489.7	4,101.1	1,584.1	1,045.6	538.5	6,654.4

BENTON COUNTY

Softwoods:							
Shortleaf pine	4.1	.5	3.6	2.0	.5	1.5	--
Eastern redcedar	3.5	2.1	1.4	.7	--	.7	1.5
Total softwoods	7.6	2.6	5.0	2.7	.5	2.2	1.5
Hardwoods:							
Select white oaks	204.9	91.1	113.8	43.7	30.8	12.9	141.3
Other white oaks	143.0	93.0	50.0	19.2	13.0	6.2	145.1
Select red oaks	35.2	13.0	22.2	8.7	5.1	3.6	18.1
Red oaks	213.1	102.2	110.9	43.1	28.9	14.2	146.5
Other red oaks	15.6	8.5	7.1	3.0	2.3	.7	43.9
Hickory A	24.7	14.5	10.2	3.7	2.7	1.0	13.2
Hickory B	31.3	22.9	8.4	3.0	1.4	1.6	22.7
Hard maple	.3	.3	—	--	--	—	1.2
Soft maple	4.7	2.3	2.4	1.0	1.0	--	4.9
Tupelo and blackgum	.3.3	1.2	2.1	.8	.5	.3	.1
Ash	7.3	3.5	3.8	1.3	1.2	.1	7.9
Sycamore	39.9	10.9	29.0	10.0	9.8	.2	4.7
River birch	.6	--	.6	.3	.3	--	.7
Black walnut	10.1	6.5	3.6	1.6	.3	1.3	9.6
Black cherry	.8	.3	.5	.2	.2	--	2.2
Elm	5.3	3.6	1.7	.6	.6	—	8.0
Other hardwoods	7.9	4.4	3.5	1.5	1.2	.3	13.8
Noncommercial species	--	--	--	--	--	--	.5
Total hardwoods	748.0	378.2	369.8	141.7	99.3	42.4	584.4
All species	755.6	380.8	374.8	144.4	99.8	44.6	585.9

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

CAMDEN COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Shortleaf pine	5.2	.6	4.6	2.6	.6	2.0	--
Eastern redcedar	6.1	3.6	2.5	1.2	--	1.2	2.6
Total softwoods	11.3	4.2	7.1	3.8	.6	3.2	2.6
Hardwoods:							
Select white oaks	259.3	117.0	142.3	54.7	38.0	16.7	177.5
Other white oaks	184.2	122.9	61.3	23.7	15.2	8.5	191.0
Select red oaks	43.9	16.5	27.4	10.6	6.2	4.4	22.9
Red oaks	275.7	135.1	140.6	54.6	35.6	19.0	191.0
Other red oaks	18.4	11.4	7.0	3.0	2.1	.9	52.9
Hickory A	29.9	18.6	11.3	4.1	2.8	1.3	16.3
Hickory B	41.2	30.5	10.7	3.8	1.7	2.1	29.0
Hard maple	.4	.4	--	--	--	--	1.4
Soft maple	2.9	1.4	1.5	.7	.7	--	3.2
Tupelo and blackgum	4.3	1.6	2.7	1.0	.7	.3	.2
Ash	7.0	3.9	3.1	1.1	.9	.2	7.2
Sycamore	29.8	8.1	21.7	7.5	7.2	.3	3.5
River birch	.5	--	.5	.3	.3	--	.8
Black walnut	12.9	7.9	5.0	2.1	.4	1.7	11.8
Black cherry	.8	.4	.4	.2	.2	--	2.7
Elm	5.3	3.8	1.5	.5	.5	--	9.6
Other hardwoods	7.3	4.0	3.3	1.4	1.2	.2	13.0
Noncommercial species	--	--	--	--	--	--	.6
Total hardwoods	923.8	483.5	440.3	169.3	113.7	55.6	734.6
All species	935.1	487.7	447.4	173.1	114.3	58.8	737.2

CEDAR COUNTY

Softwoods:							
Shortleaf pine	1.6	.2	1.4	.8	.2	.6	--
Eastern redcedar	1.2	.7	.5	.2	--	.2	.6
Total softwoods	2.8	.9	1.9	1.0	.2	.8	.6
Hardwoods:							
Select white oaks	86.1	38.0	48.1	18.5	13.1	5.4	61.0
Other white oaks	60.9	39.1	21.8	8.4	5.7	2.7	62.2
Select red oaks	15.0	5.5	9.5	3.7	2.2	1.5	7.9
Red oaks	90.4	42.8	47.6	18.5	12.5	6.0	63.2
Other red oaks	6.9	3.5	3.4	1.4	1.1	.3	19.3
Hickory A	11.0	6.3	4.7	1.7	1.3	.4	5.7
Hickory B	13.3	9.7	3.6	1.3	.6	.7	9.8
Hard maple	.1	.1	--	--	--	--	.5
Soft maple	2.3	1.1	1.2	.5	.5	--	2.4
Tupelo and blackgum	1.4	.5	.9	.3	.2	.1	--
Ash	3.4	1.6	1.8	.7	.6	.1	3.8
Sycamore	19.3	5.2	14.1	4.9	4.8	.1	2.3
River birch	.3	--	.3	.2	.2	--	.4
Black walnut	4.5	3.0	1.5	.6	.1	.5	4.3
Black cherry	.4	.1	.3	.1	.1	--	1.0
Elm	2.5	1.6	.9	.3	.3	--	3.7
Other hardwoods	3.5	1.9	1.6	.7	.6	.1	6.1
Noncommercial species	--	--	--	--	--	--	.2
Total hardwoods	321.3	160.0	161.3	61.8	43.9	17.9	253.8
All species	324.1	160.9	163.2	62.8	44.1	18.7	254.4

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

DALLAS COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Shortleaf pine	3.2	.4	2.8	1.6	.4	1.2	--
Eastern redcedar	2.6	1.6	1.0	.5	.1	.4	1.4
Total softwoods	5.8	2.0	3.8	2.1	.5	1.6	1.4
Hardwoods:							
Select white oaks	153.9	69.0	84.9	32.6	22.8	9.8	106.4
Other white oaks	109.1	71.5	37.6	14.4	9.6	4.8	110.6
Select red oaks	26.3	9.7	16.6	6.4	3.7	2.7	13.6
Red oaks	162.6	79.1	83.5	32.4	21.4	11.0	111.0
Other red oaks	11.9	6.6	5.3	2.2	1.7	.5	32.9
Hickory A	19.0	11.1	7.9	2.9	2.1	.8	10.0
Hickory B	24.0	17.6	6.4	2.3	1.1	1.2	17.2
Hard maple	.2	.2	--	--	--	--	.9
Soft maple	3.2	1.6	1.6	.7	.7	--	3.4
Tupelo and blackgum	2.5	.9	1.6	.6	.4	.2	.1
Ash	5.4	2.7	2.7	1.0	.9	.1	5.7
Sycamore	28.9	8.1	20.8	7.2	7.0	.2	3.6
River birch	.5	--	.5	.3	.3	--	.6
Black walnut	7.8	5.0	2.8	1.2	.3	.9	7.3
Black cherry	.6	.2	.4	.2	.2	--	1.7
Elm	4.0	2.7	1.3	.5	.5	--	6.2
Other hardwoods	5.6	2.9	2.7	1.1	1.0	.1	9.7
Noncommercial species	--	--	--	--	--	--	.4
Total hardwoods	565.5	288.9	276.6	106.0	73.7	32.3	441.3
All species	571.3	290.9	280.4	108.1	74.2	33.9	442.7

HICKORY COUNTY

Softwoods:							
Shortleaf pine	2.5	.3	2.2	1.3	.3	1.0	--
Eastern redcedar	1.8	1.1	.7	.3	--	.3	1.2
Total softwoods	4.3	1.4	2.9	1.6	.3	1.3	1.2
Hardwoods:							
Select white oaks	124.4	55.5	68.9	26.4	18.6	7.8	84.0
Other white oaks	87.2	56.5	30.7	11.8	8.0	3.8	87.1
Select red oaks	21.0	7.8	13.2	5.1	3.0	2.1	10.5
Red oaks	129.8	62.4	67.4	26.2	17.6	8.6	87.9
Other red oaks	9.7	5.2	4.5	1.9	1.5	.4	26.0
Hickory A	15.8	9.0	6.8	2.4	1.8	.6	8.1
Hickory B	19.2	14.1	5.1	1.8	.9	.9	13.6
Hard maple	.2	.2	--	--	--	--	.7
Soft maple	2.3	1.1	1.2	.5	.5	--	2.5
Tupelo and blackgum	2.1	.8	1.3	.5	.3	.2	.1
Ash	4.3	2.1	2.2	.8	.7	.1	5.0
Sycamore	21.6	5.5	16.1	5.7	5.6	.1	2.7
River birch	.6	--	.6	.3	.3	--	.6
Black walnut	6.4	4.4	2.0	.9	.2	.7	5.7
Black cherry	.7	.2	.5	.2	.2	--	1.5
Elm	3.2	2.1	1.1	.4	.4	--	5.4
Other hardwoods	3.7	2.0	1.7	.8	.7	.1	7.2
Noncommercial species	--	--	--	--	--	--	.3
Total hardwoods	452.2	228.9	223.3	85.7	60.3	25.4	348.9
All species	456.5	230.3	226.2	87.3	60.6	26.7	350.1

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

LACLEDE COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet 1/			Thousand cords
Softwoods:							
Shortleaf pine	5.1	.6	4.5	2.5	.5	2.0	--
Eastern redcedar	5.2	3.1	2.1	1.0	.1	.9	2.4
Total softwoods	10.3	3.7	6.6	3.5	.6	2.9	2.4
Hardwoods:							
Select white oaks	230.4	105.0	125.4	48.1	33.1	15.0	157.6
Other white oaks	169.0	116.4	52.6	20.4	12.4	8.0	129.2
Select red oaks	38.9	14.5	24.4	9.5	5.4	4.1	20.2
Red oaks	247.5	124.8	122.7	47.7	30.2	17.5	168.1
Other red oaks	17.1	10.7	6.4	2.8	1.9	.9	48.8
Hickory A	26.7	16.6	10.1	3.7	2.5	1.2	15.2
Hickory B	36.9	27.6	9.3	3.3	1.4	1.9	25.8
Hard maple	.3	.3	--	--	--	--	1.2
Soft maple	2.8	1.4	1.4	.6	.6	--	3.1
Tupelo and blackgum	3.8	1.4	2.4	.9	.6	.3	.1
Ash	6.4	3.6	2.8	1.0	.8	.2	6.5
Sycamore	28.0	8.1	19.9	6.9	6.7	.2	3.4
River birch	.4	--	.4	.2	.2	--	.7
Black walnut	11.7	6.9	4.8	2.0	.4	1.6	10.8
Black cherry	.7	.3	.4	.1	.1	--	2.4
Elm	4.8	3.5	1.3	.5	.5	--	8.4
Other hardwoods	7.3	3.9	3.4	1.4	1.1	.3	13.0
Noncommercial species	--	--	--	--	--	--	.4
Total hardwoods	832.7	445.0	387.7	149.1	97.9	51.2	665.0
All species	843.0	448.7	394.3	152.6	98.5	54.1	667.4

MARIES COUNTY

Softwoods:							
Shortleaf pine	4.1	.5	3.6	2.0	.4	1.6	--
Eastern redcedar	2.7	1.7	1.0	.5	--	.5	.9
Total softwoods	6.8	2.2	4.6	2.5	.4	2.1	.9
Hardwoods:							
Select white oaks	166.5	77.4	89.1	34.0	22.7	11.3	109.2
Other white oaks	123.6	86.6	37.0	14.4	8.3	6.1	128.3
Select red oaks	27.3	10.1	17.2	6.7	3.4	3.3	14.0
Red oaks	179.8	97.2	82.6	32.1	18.5	13.6	117.6
Other red oaks	12.2	8.4	3.8	1.7	1.1	.6	34.4
Hickory A	18.5	12.0	6.5	2.4	1.4	1.0	10.6
Hickory B	27.7	21.0	6.7	2.4	.9	1.5	18.8
Hard maple	.2	.2	--	--	--	--	.7
Soft maple	1.6	.8	.8	.3	.3	--	1.7
Tupelo and blackgum	2.7	1.0	1.7	.6	.4	.2	.1
Ash	4.4	2.7	1.7	.6	.5	.1	4.0
Sycamore	16.1	4.8	11.3	3.9	3.7	.2	1.8
River birch	.1	--	.1	.1	.1	--	.4
Black walnut	8.1	5.0	3.1	1.2	.2	1.0	7.1
Black cherry	.3	.2	.1	.1	.1	--	1.6
Elm	3.1	2.4	.7	.2	.2	--	5.4
Other hardwoods	4.9	2.8	2.1	.9	.6	.3	8.7
Noncommercial species	--	--	--	--	--	--	.3
Total hardwoods	597.1	332.6	264.5	101.6	62.4	39.2	464.7
All species	603.9	334.8	269.1	104.1	62.8	41.3	465.6

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
MILLER COUNTY							
Softwoods:							
Shortleaf pine	4.3	.5	3.8	2.1	.5	1.6	--
Eastern redcedar	2.9	1.9	1.0	.5	--	.5	1.0
Total softwoods	7.2	2.4	4.8	2.6	.5	2.1	1.0
Hardwoods:							
Select white oaks	188.6	86.0	102.6	39.3	27.0	12.3	127.6
Other white oaks	134.1	90.8	43.3	16.7	10.5	6.2	138.0
Select red oaks	31.5	11.6	19.9	7.7	4.3	3.4	16.3
Red oaks	197.1	99.8	97.3	37.8	23.8	14.0	132.6
Other red oaks	14.3	8.5	5.8	2.5	1.8	.7	40.3
Hickory A	22.0	13.4	8.6	3.1	2.1	1.0	12.1
Hickory B	29.3	21.8	7.5	2.7	1.1	1.6	20.9
Hard maple	.2	.2	--	--	--	--	.9
Soft maple	3.8	1.9	1.9	.8	.8	--	3.9
Tupelo and blackgum	3.0	1.1	1.9	.7	.4	.3	.1
Ash	6.3	3.2	3.1	1.1	1.0	.1	6.4
Sycamore	32.4	9.2	23.2	8.0	7.8	.2	3.8
River birch	.4	--	.4	.2	.2	--	.6
Black walnut	9.1	5.8	3.3	1.4	.3	1.1	8.6
Black cherry	.5	.2	.3	.1	.1	--	1.9
Elm	4.5	3.2	1.3	.5	.5	--	7.0
Other hardwoods	6.4	3.6	2.8	1.2	1.0	.2	11.3
Noncommercial species	--	--	--	--	--	--	.4
Total hardwoods	683.5	360.3	323.2	123.8	82.7	41.1	532.7
All species	690.7	362.7	328.0	126.4	83.2	43.2	533.7
MORGAN COUNTY							
Softwoods:							
Shortleaf pine	4.7	.6	4.1	2.3	.5	1.8	--
Eastern redcedar	4.3	2.3	2.0	1.0	--	1.0	1.6
Total softwoods	9.0	2.9	6.1	3.3	.5	2.8	1.6
Hardwoods:							
Select white oaks	212.0	96.9	115.1	44.0	30.4	13.6	134.3
Other white oaks	148.2	97.0	51.2	19.7	13.2	6.5	147.2
Select red oaks	35.4	13.2	22.2	8.6	5.1	3.5	16.9
Red oaks	223.9	109.8	114.1	44.4	29.2	15.2	146.5
Other red oaks	14.6	9.1	5.5	2.4	1.7	.7	41.7
Hickory A	23.7	14.7	9.0	3.3	2.2	1.1	12.8
Hickory B	32.7	24.1	8.6	3.1	1.5	1.6	22.4
Hard maple	.3	.3	--	--	--	--	.9
Soft maple	2.4	1.2	1.2	.5	.5	--	2.6
Tupelo and blackgum	3.4	1.2	2.2	.8	.5	.3	.1
Ash	5.4	3.1	2.3	.8	.7	.1	5.3
Sycamore	23.8	6.7	17.1	5.9	5.7	.2	2.7
River birch	.3	--	.3	.2	.2	--	.6
Black walnut	9.7	6.1	3.6	1.5	.3	1.2	8.1
Black cherry	.6	.3	.3	.1	.1	--	2.0
Elm	4.3	3.1	1.2	.4	.4	--	7.2
Other hardwoods	5.3	3.0	2.3	1.0	.9	.1	9.8
Noncommercial species	--	--	--	--	--	--	.5
Total hardwoods	746.0	389.8	356.2	136.7	92.6	44.1	561.6
All species	755.0	392.7	362.3	140.0	93.1	46.9	563.2

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

PHELPS COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Shortleaf pine	7.9	1.0	6.9	3.8	.6	3.2	--
Eastern redcedar	7.2	4.0	3.2	1.6	--	1.6	2.2
Total softwoods	15.1	5.0	10.1	5.4	.6	4.8	2.2
Hardwoods:							
Select white oaks	263.2	124.0	139.2	53.2	35.7	17.5	169.1
Other white oaks	190.8	134.1	56.7	22.1	12.7	9.4	198.9
Select red oaks	44.1	16.2	27.9	10.9	6.1	4.8	21.5
Red oaks	295.1	153.2	141.9	55.2	32.9	22.3	186.7
Other red oaks	19.0	13.3	5.7	2.5	1.6	.9	52.1
Hickory A	29.2	18.9	10.3	3.7	2.3	1.4	16.8
Hickory B	42.6	31.9	10.7	3.8	1.4	2.4	28.2
Hard maple	.4	.4	--	--	--	--	1.0
Soft maple	2.0	1.0	1.0	.4	.4	--	2.2
Tupelo and blackgum	4.1	1.4	2.7	.9	.6	.3	.2
Ash	6.1	3.9	2.2	.8	.6	.2	5.6
Sycamore	21.8	6.4	15.4	5.3	5.0	.3	2.3
River birch	.2	--	.2	.1	.1	--	.7
Black walnut	12.6	7.5	5.1	2.1	.4	1.7	10.8
Black cherry	.5	.4	.1	.1	.1	--	2.4
Elm	4.7	3.6	1.1	.4	.4	--	8.5
Other hardwoods	6.2	3.4	2.8	1.2	.9	.3	11.2
Noncommercial species	--	--	--	--	--	--	.5
Total hardwoods	942.6	519.6	423.0	162.7	101.2	61.5	718.7
All species	957.7	524.6	433.1	168.1	101.8	66.3	720.9

POLK COUNTY

Softwoods:							
Shortleaf pine	2.0	.3	1.7	1.0	.2	.8	--
Eastern redcedar	5.0	2.7	2.3	1.1	--	1.1	1.9
Total softwoods	7.0	3.0	4.0	2.1	.2	1.9	1.9
Hardwoods:							
Select white oaks	94.6	43.4	51.2	19.6	13.5	6.1	67.0
Other white oaks	67.8	45.9	21.9	8.5	5.3	3.2	72.6
Select red oaks	16.4	6.1	10.3	4.0	2.3	1.7	9.1
Red oaks	100.5	49.9	50.6	19.7	12.6	7.1	70.4
Other red oaks	8.2	4.2	4.0	1.6	1.3	.3	23.3
Hickory A	12.5	7.1	5.4	1.9	1.4	.5	6.6
Hickory B	14.7	10.9	3.8	1.4	.6	.8	11.0
Hard maple	.1	.1	--	--	--	--	.7
Soft maple	2.9	1.5	1.4	.7	.7	--	3.0
Tupelo and blackgum	1.4	.5	.9	.3	.2	.1	.1
Ash	4.2	1.9	2.3	.8	.7	.1	4.5
Sycamore	24.2	6.6	17.6	6.1	6.0	.1	2.9
River birch	.4	--	.4	.2	.2	--	.4
Black walnut	5.6	3.3	2.3	1.0	.1	.9	5.0
Black cherry	.5	.1	.4	.1	.1	--	1.2
Elm	2.9	1.9	1.0	.4	.4	--	4.7
Other hardwoods	4.3	2.4	1.9	.8	.6	.2	7.7
Noncommercial species	--	--	--	--	--	--	.2
Total hardwoods	361.2	185.8	175.4	67.1	46.0	21.1	290.4
All species	368.2	188.8	179.4	69.2	46.2	23.0	292.3

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

PULASKI COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Shortleaf pine	4.7	.6	4.1	2.3	.5	1.8	--
Eastern redcedar	3.4	2.2	1.2	.6	--	.6	1.8
Total softwoods	8.1	2.8	5.3	2.9	.5	2.4	1.8
Hardwoods:							
Select white oaks	208.1	96.1	112.0	42.9	29.1	13.8	141.0
Other white oaks	153.6	105.8	47.8	18.6	11.2	7.4	160.9
Select red oaks	35.4	13.0	22.4	8.7	4.8	3.9	18.1
Red oaks	226.9	116.7	110.2	42.8	26.4	16.4	152.0
Other red oaks	16.2	9.9	6.3	2.7	1.9	.8	44.5
Hickory A	25.3	15.4	9.9	3.6	2.4	1.2	14.0
Hickory B	34.0	25.5	8.5	3.0	1.2	1.8	23.5
Hard maple	.3	.3	--	--	--	--	1.1
Soft maple	3.1	1.5	1.6	.7	.7	--	3.3
Tupelo and blackgum	3.2	1.1	2.1	.7	.4	.3	.1
Ash	6.4	3.5	2.9	1.0	.9	.1	6.6
Sycamore	28.9	8.0	20.9	7.3	7.1	.2	3.5
River birch	.5	--	.5	.3	.3	--	.7
Black walnut	10.7	6.8	3.9	1.6	.3	1.3	9.9
Black cherry	.7	.3	.4	.2	.2	--	2.3
Elm	4.7	3.3	1.4	.5	.5	--	8.2
Other hardwoods	6.0	3.3	2.7	1.2	1.0	.2	11.2
Noncommercial species	--	--	--	--	--	--	.5
Total hardwoods	764.0	410.5	353.5	135.8	88.4	47.4	601.4
All species	772.1	413.3	358.8	138.7	88.9	49.8	603.2
ST. CLAIR COUNTY							
Softwoods:							
Shortleaf pine	2.9	.3	2.6	1.4	.4	1.0	--
Eastern redcedar	2.1	1.4	.7	.4	--	.4	1.8
Total softwoods	5.0	1.7	3.3	1.8	.4	1.4	1.8
Hardwoods:							
Select white oaks	145.0	64.0	81.0	31.1	22.1	9.0	103.9
Other white oaks	101.5	65.3	36.2	13.9	9.5	4.4	103.1
Select red oaks	25.3	9.2	16.1	6.2	3.7	2.5	13.3
Red oaks	150.4	71.4	79.0	30.7	20.8	9.9	105.0
Other red oaks	12.8	5.9	6.9	2.9	2.4	.5	33.8
Hickory A	20.1	10.8	9.3	3.4	2.7	.7	10.0
Hickory B	22.0	16.1	5.9	2.1	1.0	1.1	16.4
Hard maple	.2	.2	--	--	--	--	1.2
Soft maple	4.7	2.3	2.4	1.0	1.0	--	5.0
Tupelo and blackgum	2.3	.9	1.4	.5	.3	.2	.1
Ash	6.8	2.9	3.9	1.4	1.3	.1	8.1
Sycamore	39.7	10.3	29.4	10.3	10.1	.2	5.0
River birch	.9	--	.9	.5	.5	--	.8
Black walnut	8.2	5.6	2.6	1.1	.2	.9	7.8
Black cherry	1.0	.2	.8	.3	.3	--	2.0
Elm	4.8	2.9	1.9	.7	.7	--	7.4
Other hardwoods	6.9	3.8	3.1	1.4	1.1	.3	12.7
Noncommercial species	--	--	--	--	--	--	.4
Total hardwoods	552.6	271.8	280.8	107.5	77.7	29.8	436.0
All species	557.6	273.5	284.1	109.3	78.1	31.2	437.8

1/ International 1/4-inch rule.

Table 22.--*Net volume of timber on commercial forest land, by class of timber and softwoods and hardwoods, Northwestern Ozarks, Missouri, 1972*

(Million cubic feet)

Class of timber	All species	Softwoods	Hardwoods
Growing-stock trees:			
Saw log trees:			
Saw log portion	226.1	4.2	221.9
Upper stem portion	98.0	1.0	97.0
Total sawtimber	324.1	5.2	318.9
Poletimber trees	354.7	2.8	351.9
Total growing stock	678.8	8.0	670.8
Cull trees:			
Rough cull trees:			
Sawtimber	139.3	.9	138.4
Poletimber	232.8	.6	232.2
Total rough cull	372.1	1.5	370.6
Short log cull trees:			
Sawtimber	78.3	.1	78.2
Poletimber	--	--	--
Total short log	78.3	.1	78.2
Rotten cull trees:			
Sawtimber	51.6	--	51.6
Poletimber	23.7	--	23.7
Total rotten cull	75.3	--	75.3
Total cull	525.7	1.6	524.1
Salvable dead trees:			
Sawtimber	6.1	--	6.1
Poletimber	3.8	.2	3.6
Total salvable dead	9.9	.2	9.7
All classes	1,214.4	9.8	1,204.6

Table 23.--*Net volume of growing stock, sawtimber, and rough and rotten trees on commercial forest land, by individual species, Northwestern Ozarks, Missouri, 1972*

Species	Growing stock	Sawtimber	Rough and rotten trees
	Million cubic feet	Million board feet[1/]	Million cubic feet
Softwoods:			
Shortleaf pine	4.2	25.7	--
Eastern redcedar	3.8	9.6	1.6
Total softwoods	8.0	35.3	1.6
Hardwoods:			
Select white oak group			
Bur oak	--	--	1.1
Chinkapin oak	5.9	11.3	18.7
White oak	178.1	475.2	104.2
Swamp chestnut oak	.3	1.6	--
Swamp white oak	.3	--	.8
Other white oak group			
Post oak	132.2	211.8	136.2
Select red oak group			
Northern red oak	30.0	91.7	14.8
Shumard oak	1.3	5.1	1.2
Red oak group			
Black oak	192.4	471.1	126.0
Scarlet oak	4.4	14.1	6.4
Southern red oak	--	--	.2
Other red oak group			
Blackjack oak	10.4	16.9	29.9
Pin oak	2.5	12.1	3.4
Shingle oak	.8	1.6	5.7
Willow oak	.2	--	--
Hickory A group			
Mockernut hickory	13.8	25.6	7.5
Pecan	.2	--	--
Shagbark hickory	6.9	11.3	3.6
Shellbark hickory	1.2	3.0	.9
Hickory B group			
Black hickory	2.6	2.6	.7
Bitternut hickory	2.6	3.5	1.7
Pignut hickory	24.0	27.9	18.1
Hardwoods (cont.):			
Hard maple group			
Sugar maple	.3	--	1.0
Soft maple group			
Red maple	--	--	.2
Silver maple	3.0	8.4	3.1
Sweetgum	--	--	--
Tupelo and blackgum group			
Blackgum	2.9	8.6	.1
Ash group			
Blue ash	.3	--	--
Green ash	2.5	6.6	2.4
White ash	3.0	5.8	3.6
Sycamore group			
American sycamore	28.0	89.0	3.4
River birch	.5	3.2	.6
Black walnut	9.3	18.3	8.4
Black cherry	.7	2.0	2.0
Elm group			
American elm	3.5	3.9	5.8
Slippery elm	.8	2.0	1.3
Other hardwoods			
Black locust	--	--	.4
Black willow	.8	.2	.1
Boxelder	.3	1.6	1.8
Butternut	--	--	.2
Common persimmon	--	--	.9
Flowering dogwood	--	--	.5
Hackberry	3.2	5.9	3.1
Honeylocust	.3	--	1.3
Kentucky coffeetree	.1	1.7	.2
Osage orange	--	--	.2
Red mulberry	.3	3.0	1.3
Sassfras	.5	1.1	.7
Sugarberry	.4	1.1	--
Noncommercial	--	--	.4
Total hardwoods	670.8	1,548.8	524.1
All species	678.8	1,584.1	525.7

1/ International 1/4-inch rule.

Table 24.--*Net volume of growing stock and sawtimber on commercial forest land, by ownership class and species group, Northwestern Ozarks, Missouri, 1972*

GROWING STOCK

Ownership class	All species	Shortleaf pine	Other softwoods	Soft hardwoods	Hard hardwoods
			Thousand cords		
National Forest	678.7	17.7	0.6	27.9	632.5
Other federal	230.8	--	--	208.2	22.6
State, county and municipal	34.8	--	--	--	34.8
Forest industry	1.8	--	--	--	1.8
Farmer and miscellaneous private	7,644.7	34.6	47.4	317.2	7,245.5
All ownerships	8,590.8	52.3	48.0	553.3	7,937.2

SAWTIMBER

			Million board feet[1/]		
National Forest	140.4	6.8	--	4.7	128.9
Other federal	44.2	--	--	40.8	3.4
State, county and municipal	2.8	--	--	--	2.8
Forest industry	--	--	--	--	--
Farmer and miscellaneous private	1,396.7	18.9	9.6	78.9	1,289.3
All ownerships	1,584.1	25.7	9.6	124.4	1,424.4

1/ International 1/4-inch rule.

Table 25.--*Net volume of growing stock on commercial forest land, by species and diameter class, Northwestern Ozarks, Missouri, 1972*

(Thousand cords)

Species	All classes	Diameter class (inches at breast height)											
		5.0-6.9	7.0-9.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods:													
Shortleaf pine	52.3	2.1	4.3	--	18.7	13.9	3.4	9.9	--	--	--	--	--
Eastern redcedar	48.0	13.9	14.5	13.5	6.1	--	--	--	--	--	--	--	--
Total softwoods	100.3	16.0	18.8	13.5	24.8	13.9	3.4	9.9	--	--	--	--	--
Hardwoods:													
Select white oaks	2,337.0	156.3	406.7	500.5	385.7	478.7	227.0	82.2	49.6	27.8	15.7	6.8	--
Other white oaks	1,673.0	461.3	360.2	303.4	200.1	201.3	78.4	44.6	6.0	12.9	4.8	--	--
Select red oaks	395.7	24.4	51.3	70.6	61.1	59.1	63.3	14.5	4.8	20.1	26.5	--	--
Red oaks	2,492.8	383.4	471.7	389.3	394.1	312.2	218.1	142.8	74.1	40.7	44.6	21.8	--
Other red oaks	176.9	40.5	37.7	27.0	16.6	13.1	6.2	7.1	8.5	6.5	13.7	--	--
Hickory A	278.4	62.6	51.8	54.0	31.3	24.4	19.6	27.1	7.6	--	--	--	--
Hickory B	368.9	107.5	97.4	68.8	46.9	20.1	14.0	6.4	4.5	--	3.3	--	--
Hard maple	3.2	3.2	--	--	--	--	--	--	--	--	--	--	--
Soft maple	38.7	7.2	12.1	--	2.9	--	--	--	16.5	--	--	--	--
Tupelo and blackgum	37.5	--	4.2	9.3	--	--	12.0	5.1	--	--	--	6.9	--
Ash	73.4	3.4	10.3	24.8	19.6	7.3	--	--	--	8.0	--	--	--
Sycamore	354.4	24.1	27.7	46.2	63.9	52.2	53.6	22.8	--	17.8	25.6	20.5	--
River birch	5.7	--	--	--	--	--	--	--	5.7	--	--	--	--
Black walnut	117.4	23.4	30.1	20.3	21.6	12.9	3.5	5.6	--	--	--	--	--
Black cherry	8.1	3.2	--	--	--	--	--	4.9	--	--	--	--	--
Elm	54.1	11.6	19.3	6.7	--	5.0	5.8	5.7	--	--	--	--	--
Other hardwoods	75.3	12.0	7.2	22.2	12.2	13.4	--	8.3	--	--	--	--	--
Total hardwoods	8,490.5	1,324.1	1,587.7	1,543.1	1,256.0	1,199.7	701.5	377.1	177.3	133.8	134.2	56.0	--
All species	8,590.8	1,340.1	1,606.5	1,556.6	1,280.8	1,213.6	704.9	387.0	177.3	133.8	134.2	56.0	--

Table 26.--*Net volume of sawtimber on commercial forest land, by species and diameter class, Northwestern Ozarks, Missouri, 1972*

(Million board feet)[1/]

Species	All classes	Diameter class (inches at breast height)									
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods:											
Shortleaf pine	25.7	--	9.4	7.9	2.9	5.5	--	--	--	--	--
Eastern redcedar	9.6	6.8	2.8	--	--	--	--	--	--	--	--
Total softwoods	35.3	6.8	12.2	7.9	2.9	5.5	--	--	--	--	--
Hardwoods:											
Select white oaks	488.1	--	143.9	187.2	88.2	31.6	17.2	10.9	6.2	2.9	--
Other white oaks	211.8	--	79.4	76.4	28.4	17.7	3.6	4.9	1.4	--	--
Select red oaks	96.8	--	22.6	23.9	24.7	7.2	1.9	7.3	9.2	--	--
Red oaks	485.2	--	155.6	121.8	83.8	56.4	29.6	16.6	14.9	6.5	--
Other red oaks	30.6	--	6.4	6.0	4.1	2.8	3.9	2.2	5.2	--	--
Hickory A	39.9	--	13.4	9.1	5.9	9.5	2.0	--	--	--	--
Hickory B	34.0	--	16.0	7.6	5.3	2.2	1.5	--	1.4	--	--
Soft maple	8.4	--	1.4	--	--	--	7.0	--	--	--	--
Tupelo and blackgum	8.6	--	--	--	3.4	1.9	--	--	--	3.3	--
Ash	12.4	--	6.5	2.5	--	--	--	3.4	--	--	--
Sycamore	89.0	--	17.3	17.3	18.6	8.2	--	7.4	12.2	8.0	--
River birch	3.2	--	--	--	--	--	3.2	--	--	--	--
Black walnut	18.3	--	9.2	4.7	2.2	2.2	--	--	--	--	--
Black cherry	2.0	--	--	--	--	2.0	--	--	--	--	--
Elm	5.9	--	--	1.9	2.0	2.0	--	--	--	--	--
Other hardwoods	14.6	--	3.8	7.8	--	3.0	--	--	--	--	--
Total hardwoods	1,548.8	--	475.5	466.2	266.6	146.7	69.9	52.7	50.5	20.7	--
All species	1,584.1	6.8	487.7	474.1	269.5	152.2	69.9	52.7	50.5	20.7	--

1/ International 1/4-inch rule.

Table 27.—*Net volume of growing stock on commercial forest land, by species and forest type, Northwestern Ozarks, Missouri, 1972*

(Million cubic feet)

Species	All forest types	Eastern redcedar	Eastern redcedar-hardwood	Post-blackjack oak	Black-scarlet oak	White oak	Elm-ash-cottonwood	Maple-beech	Non-stocked
Softwoods:									
Shortleaf pine	4.2	--	--	--	4.2	--	--	--	--
Eastern redcedar	3.8	1.0	.8	1.0	.7	--	--	--	.3
Total softwoods	8.0	1.0	.8	1.0	4.9	--	--	--	.3
Hardwoods:									
Select white oaks	184.6	.1	.5	13.1	49.9	116.8	1.3	.4	2.5
Other white oaks	132.2	--	.6	100.7	19.7	6.0	1.6	--	3.6
Select red oaks	31.3	--	--	1.6	18.0	10.1	.3	--	1.3
Red oaks	196.8	--	1.1	30.3	140.6	20.1	.8	1.4	2.5
Other red oaks	13.9	--	--	6.5	4.0	.5	2.6	--	.3
Hickory A	22.1	--	--	4.9	11.7	2.6	2.9	--	--
Hickory B	29.2	--	--	16.8	8.8	2.8	--	.8	--
Hard maple	.3	--	--	--	.3	--	--	--	--
Soft maple	3.0	--	--	--	--	--	3.0	--	--
Tupelo and blackgum	2.9	--	--	--	1.6	1.3	--	--	--
Ash	5.8	--	--	.9	1.1	.9	2.9	--	--
Sycamore	28.0	--	.1	.2	2.8	2.6	22.3	--	--
River birch	.5	--	--	--	--	--	.5	--	--
Black walnut	9.3	.1	--	1.6	3.1	2.7	1.0	.2	.6
Black cherry	.7	--	--	--	.3	--	.4	--	--
Elm	4.3	--	--	--	1.6	1.0	1.7	--	--
Other hardwoods	5.9	--	.6	1.1	.3	.9	2.5	.2	.3
Total hardwoods	670.8	.2	2.9	177.7	263.8	168.3	43.8	3.0	11.1
All species	678.8	1.2	3.7	178.7	268.7	168.3	43.8	3.0	11.4

Table 28.--*Net volume of sawtimber on commercial forest land, by species and forest type, Northwestern Ozarks, Missouri, 1972*

(Million board feet)[1/]

Species	All forest types	Eastern redcedar	Eastern redcedar-hardwood	Post-blackjack oak	Black-scarlet oak	White oak	Elm-ash-cottonwood	Maple-beech	Nonstocked
Softwoods:									
Shortleaf pine	25.7	--	--	--	25.7	--	--	--	--
Eastern redcedar	9.6	2.9	.2	2.6	3.9	--	--	--	--
Total softwoods	35.3	2.9	.2	2.6	29.6	--	--	--	--
Hardwoods:									
Select white oaks	488.1	--	.9	42.5	133.2	296.1	6.6	2.0	6.8
Other white oaks	211.8	--	1.4	139.1	45.1	8.7	6.1	--	11.4
Select red oaks	96.8	--	--	4.3	58.0	29.7	1.4	--	3.4
Red oaks	485.2	--	.9	52.2	368.7	50.0	4.0	4.6	4.8
Other red oaks	30.6	--	--	7.5	9.2	--	12.1	--	1.8
Hickory A	39.9	--	.1	6.0	20.5	3.1	10.2	--	--
Hickory B	34.0	--	--	21.1	8.7	2.0	--	2.2	--
Soft maple	8.4	--	--	--	--	--	8.4	--	--
Tupelo and blackgum	8.6	--	--	--	3.3	5.3	--	--	--
Ash	12.4	--	--	1.4	--	1.3	9.7	--	--
Sycamore	89.0	--	--	--	9.3	7.2	72.5	--	--
River birch	3.2	--	--	--	--	--	3.2	--	--
Black walnut	18.3	.6	.1	3.3	6.5	3.4	--	--	4.4
Black cherry	2.0	--	--	--	--	--	2.0	--	--
Elm	5.9	--	--	--	2.0	--	3.9	--	--
Other hardwoods	14.6	--	1.2	1.1	3.0	2.9	6.4	--	--
Total hardwoods	1,548.8	.6	4.6	278.5	667.5	409.7	146.5	8.8	32.6
All species	1,584.1	3.5	4.8	281.1	697.1	409.7	146.5	8.8	32.6

1/ International 1/4-inch rule.

Table 29.--*Net volume of timber in cull trees on commercial forest land, by species and cull tree class, Northwestern Ozarks, Missouri, 1972*

(Million cubic feet)

Species	All cull trees	Rough trees	Short-log trees1/	Rotten trees
Softwoods:				
Eastern redcedar	1.6	1.5	.1	--
Total softwoods	1.6	1.5	.1	--
Hardwoods:				
Select white oaks	124.8	87.4	25.9	11.5
Other white oaks	136.2	106.5	15.7	14.0
Select red oaks	16.0	12.1	1.0	2.9
Red oaks	132.6	82.1	21.1	29.4
Other red oaks	39.0	28.0	4.0	7.0
Hickory A	12.0	9.8	1.1	1.1
Hickory B	20.5	16.7	2.3	1.5
Hard maple	1.0	.8	--	.2
Soft maple	3.3	2.2	--	1.1
Tupelo and blackgum	.1	--	--	.1
Ash	6.0	4.2	.8	1.0
Sycamore	3.4	.7	2.0	.7
River birch	.6	.2	--	.4
Black walnut	8.4	5.7	1.6	1.1
Black cherry	2.0	1.1	.9	--
Elm	7.1	5.0	1.2	.9
Other hardwoods	10.7	7.8	.6	2.3
Noncommercial species	.4	.3	--	.1
Total hardwoods	524.1	370.6	78.2	75.3
All species	525.7	372.1	78.3	75.3

1/ Volumes are for trees 9.0 inches d.b.h. and larger for softwoods and 11.0 inches d.b.h. and larger for hardwoods. Volumes for rough and rotten trees are for trees 5.0 inches d.b.h. and larger.

Table 30.--*Net volume of short-log trees on commercial forest land, by species and diameter class, Northwestern Ozarks, Missouri, 1972*

(Million board feet)[1/]

Species	All classes	Diameter class (inches at breast height)									
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
Softwoods:											
Eastern redcedar	.6	.4	--	.2	--	--	--	--	--	--	--
Total softwoods	.6	.4	--	.2	--	--	--	--	--	--	--
Hardwoods:											
Select white oaks	87.4	--	30.4	20.8	12.3	10.1	4.0	2.3	5.1	2.4	--
Other white oaks	59.6	--	24.4	21.1	9.4	.9	1.8	2.0	--	--	--
Select red oaks	3.2	--	1.6	--	1.6	--	--	--	--	--	--
Red oaks	61.1	--	18.1	15.6	16.3	5.4	2.8	2.1	--	.8	--
Other red oaks	11.4	--	5.0	2.4	--	2.5	.7	--	.8	--	--
Hickory A	4.3	--	2.1	1.0	--	1.2	--	--	--	--	--
Hickory B	5.5	--	2.1	--	2.3	1.1	--	--	--	--	--
Ash	3.3	--	1.6	1.7	--	--	--	--	--	--	--
Sycamore	4.8	--	--	2.6	--	--	--	1.1	1.1	--	--
Black walnut	4.3	--	1.7	--	1.4	--	--	--	1.2	--	--
Black cherry	2.0	--	--	--	--	--	2.0	--	--	--	--
Elm	2.6	--	--	1.1	--	.8	.7	--	--	--	--
Other hardwoods	1.6	--	--	1.2	--	.4	--	--	--	--	--
Total hardwoods	251.1	--	87.0	67.5	43.3	22.4	12.0	7.5	8.2	3.2	--
All species	251.7	.4	87.0	67.7	43.3	22.4	12.0	7.5	8.2	3.2	--

1/ International 1/4-inch rule.

Table 31.—*Net volume of sawtimber on commercial forest land, by species and log grade class, Northwestern Ozarks, Missouri, 1972*

(Million board feet)[1/]

Species	All grades	Log Grade 1	Log Grade 2	Log Grade 3	Tie and timber
Softwoods:					
Shortleaf pine	25.7	1.2	2.1	22.4	--
Eastern redcedar	9.6	--	--	9.5	.1
Total softwoods	35.3	1.2	2.1	31.9	.1
Hardwoods:					
Select white oaks	488.1	16.7	93.4	274.0	104.0
Other white oaks	211.8	7.0	26.0	141.0	37.8
Select red oaks	96.8	7.9	23.3	42.6	23.0
Red oaks	485.2	28.0	121.0	257.0	79.2
Other red oaks	30.6	--	2.5	12.1	16.0
Hickory A	39.9	--	8.6	22.4	8.9
Hickory B	34.0	5.7	4.1	12.8	11.4
Soft maple	8.4	--	5.8	--	2.6
Tupelo and blackgum	8.6	.7	4.3	2.0	1.6
Ash	12.4	--	6.4	6.0	--
Sycamore	89.0	7.4	34.4	43.0	4.2
River birch	3.2	--	--	3.2	--
Black walnut	18.3	--	--	18.3	--
Black cherry	2.0	--	--	1.7	.3
Elm	5.9	--	--	5.9	--
Other hardwoods	14.6	--	6.6	6.9	1.1
Total hardwoods	1,548.8	73.4	336.4	848.9	290.1
All species	1,584.1	74.6	338.5	880.8	290.2

1/ International 1/4-inch rule.

Table 32.--*Walnut volume on nonforest land, by diameter class and class of timber, Northwestern Ozarks, Missouri, 1972*

Diameter class (inches at breast height)	Growing-stock trees	Sawtimber trees	Rough trees	Short-log trees	Rotten trees
	Thousand cubic feet	Thousand board feet[1/]	Thousand cubic feet	Thousand board feet[1/]	Thousand cubic feet
5.0-6.9	--	--	447.4	--	--
7.0-8.9	--	--	374.0	--	--
9.0-10.9	627.7	--	252.7	--	--
11.0-12.9	216.6	1,579.0	--	--	167.3
13.0-14.9	256.5	1,709.5	237.5	--	--
15.0-16.9	370.8	1,742.3	--	2,936.1	--
17.0-18.9	--	--	--	--	181.8
19.0-20.9	370.8	2,108.9	--	--	172.0
21.0-22.9	--	--	337.6	--	--
All diameters	1,842.4	7,139.7	1,649.2	2,936.1	521.1

1/ International 1/4-inch rule.

Table 33.—*Net annual growth of growing stock and sawtimber on commercial forest land, by species and county, Northwestern Ozarks, Missouri, 1971*

Species	All counties		Benton		Camden		Cedar		Dallas		Hickory		Laclede	
	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber
	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/
Softwoods:														
Shortleaf pine	1,791	892	138	69	175	88	54	27	108	54	84	42	173	86
Eastern redcedar	2,938	156	237	10	350	20	107	3	187	10	137	5	323	18
Total softwoods	4,729	1,048	375	79	525	108	161	30	295	64	221	47	496	104
Hardwoods:														
Select white oaks	51,839	9,186	4,549	829	5,762	1,040	1,913	353	3,417	618	2,763	501	5,112	908
Other white oaks	32,867	2,431	2,783	224	3,604	269	1,181	98	2,130	168	1,696	137	3,338	231
Select red oaks	11,328	2,034	1,005	179	1,256	223	427	76	751	134	601	107	1,114	199
Red oaks	72,770	11,770	6,180	1,042	8,030	1,321	2,602	441	4,724	787	3,764	634	7,250	1,153
Other red oaks	3,692	192	320	23	374	10	139	11	245	17	204	17	360	14
Hickory A	5,649	606	510	56	614	63	233	26	395	44	339	38	538	57
Hickory B	8,699	533	732	47	971	59	311	20	564	36	451	29	869	52
Hard maple	44	--	4	--	5	--	2	--	3	--	2	--	4	--
Soft maple	1,332	418	161	50	101	32	79	25	112	35	79	25	97	30
Tupelo and blackgum	324	77	29	7	37	8	12	3	21	5	18	4	33	8
Ash	1,990	442	203	48	185	38	96	24	149	35	118	29	171	35
Sycamore	11,344	3,611	1,317	419	907	290	644	207	944	298	694	228	866	271
River birch	12	6	1	1	1	1	1	--	1	--	1	1	1	1
Black walnut	2,635	425	232	39	287	49	103	16	176	28	147	20	260	46
Black cherry	113	4	11	--	12	--	5	--	8	--	7	1	11	--
Elm	-234	-246	-6	-22	-42	-30	1	-9	-7	-16	-4	-12	-35	-26
Other hardwoods	2,965	580	327	62	262	54	141	28	221	47	138	29	293	58
Total hardwoods	207,369	32,069	18,358	3,004	22,366	3,427	7,890	1,319	13,854	2,236	11,018	1,788	20,282	3,037
All species	212,098	33,117	18,733	3,083	22,891	3,535	8,051	1,349	14,149	2,300	11,239	1,835	20,778	3,141

(Table 33 cont. on next page)

(Table 33 cont.)

Species	Maries		Miller		Morgan		Phelps		Polk		Pulaski		St. Clair	
	Growing stock	Saw-timber	Growing stock	Saw-timber	Growing stock	Saw-timber	Growing stock	Saw-timber	Growing stock	Saw-timber	Growing stock	Saw-timber	Growing stock	Saw-timber
	Cords	Thousand bd. ft.1/	Cords	Thousand bd. ft.1/	Cords	Thousand bd. ft.1/	Cords	Thousand bd. ft.1/	Cords	Thousand bd. ft.1/	Cords	Thousand bd. ft.1/	Cords	Thousand bd. ft.1/
Softwoods:														
Shortleaf pine	143	71	148	74	161	80	279	138	69	34	163	81	96	48
Eastern redcedar	191	8	210	8	242	15	355	26	187	19	248	9	164	5
Total softwoods	334	79	358	82	403	95	634	164	256	53	411	90	260	53
Hardwoods:														
Select white oaks	3,681	632	4,180	736	4,713	826	5,810	975	2,103	370	4,618	805	3,218	593
Other white oaks	2,456	160	2,646	193	2,889	229	3,794	248	1,339	99	3,039	211	1,972	164
Select red oaks	792	149	905	165	1,015	180	1,262	226	467	83	1,012	184	721	129
Red oaks	5,334	788	5,793	920	6,515	1,081	8,633	1,348	2,937	474	6,659	1,039	4,349	742
Other red oaks	261	4	302	18	310	15	411	7	167	13	339	15	260	28
Hickory A	354	35	436	46	473	49	543	57	261	29	513	54	440	52
Hickory B	665	38	691	42	769	49	1,009	60	345	21	808	47	514	33
Hard maple	3	--	3	--	4	--	5	--	2	--	4	--	3	--
Soft maple	56	18	131	41	82	26	67	21	101	32	105	33	161	50
Tupelo and blackgum	24	6	26	6	29	7	35	8	12	3	28	7	20	5
Ash	114	20	173	39	143	29	157	27	118	30	172	37	191	51
Sycamore	495	153	1,068	336	725	229	623	193	815	261	912	292	1,334	434
River birch	--	--	1	--	1	--	--	--	1	1	1	--	2	1
Black walnut	177	28	206	34	218	34	275	44	123	22	240	37	191	28
Black cherry	6	--	8	--	10	1	12	--	5	--	10	1	8	1
Elm	-22	-14	-10	-17	-35	-26	-66	-34	2	-8	-26	-21	16	-11
Other hardwoods	201	35	261	49	194	40	231	45	173	32	228	46	295	55
Total hardwoods	14,597	2,052	16,820	2,608	18,055	2,769	22,801	3,225	8,971	1,462	18,662	2,787	13,695	2,355
All species	14,931	2,131	17,178	2,690	18,458	2,864	23,435	3,389	9,227	1,515	19,073	2,877	13,955	2,408

1/ International 1/4-inch rule.

Table 34.--*Timber removals from growing stock and sawtimber on commercial forest land, by item and species group, Northwestern Ozarks, Missouri, 1971*[1/]

Item	Growing stock					Sawtimber				
	All species	Shortleaf pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Shortleaf pine	Other softwoods	Soft hardwoods	Hard hardwoods
	Cords					Thousand board feet[2/]				
Roundwood products:										
Saw logs	33,390	28	919	7,836	24,607	13,499	13	329	3,934	9,223
Cooperage logs	8,532	--	--	--	8,532	4,055	--	--	--	4,055
Veneer logs	392	--	--	--	392	145	--	--	--	145
Charcoal wood	16,570	--	--	253	16,317	1,928	--	--	37	1,891
Posts	1,949	--	--	177	1,772	454	--	--	47	407
Poles	--	--	--	--	--	1	1	--	--	--
Fuelwood	18,605	--	23	1,785	16,797	3,503	--	3	337	3,163
Mine timbers	89	--	--	--	89	8	--	--	--	8
Miscellaneous[3/]	4,008	--	1,906	1,304	798	1,727	--	822	562	343
All products	83,535	28	2,848	11,355	69,304	25,320	14	1,154	4,917	19,235
Logging residues	11,238	6	169	987	10,076	1,461	1	55	157	1,248
Other removals	65,240	--	--	11,583	53,657	7,443	--	--	1,321	6,122
Total removals	160,013	34	3,017	23,925	133,037	34,224	15	1,209	6,395	26,605

1/ See glossary for timber removals from growing stock (page 5).
2/ International 1/4-inch rule.
3/ Includes shaving wood, heading bolts, etc.

Table 35.--*Timber removals from growing stock and sawtimber on commercial forest land, by species and county, Northwestern Ozarks, Missouri, 1971*

Species	All counties		Benton		Camden		Cedar		Dallas	
	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber
	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/
Softwoods:										
Shortleaf pine	34	15	--	--	--	--	--	--	--	--
Eastern redcedar	3,017	1,209	586	237	11	1	--	--	--	--
Total softwoods	3,051	1,224	586	237	11	1	--	--	--	--
Hardwoods:										
Select white oaks	31,208	7,590	1,173	277	1,536	413	464	79	1,457	398
Other white oaks	41,890	6,855	2,811	410	3,633	541	1,178	158	2,434	406
Select red oaks	2,238	558	15	3	147	43	28	7	127	36
Red oaks	42,775	8,363	1,632	205	3,573	707	944	151	2,566	549
Hickory B	8,911	1,710	433	62	572	88	174	24	308	43
Hard maple	431	165	--	--	--	--	--	--	76	29
Soft maple	1,873	846	13	8	468	213	13	6	468	213
Tupelo and blackgum	25	4	--	--	--	--	--	--	--	--
Ash	1,546	571	--	1	228	89	--	1	228	89
Sycamore	6,938	3,133	38	18	367	162	89	40	304	146
Cottonwood	684	324	--	1	--	--	--	1	--	--
River birch	25	18	--	--	--	--	--	--	--	--
Black walnut	4,013	775	435	96	309	38	268	66	192	26
Black cherry	76	46	--	--	--	--	--	--	--	--
Elm	10,167	1,321	919	113	919	97	486	84	706	96
Other hardwoods	4,162	721	437	77	314	38	165	23	303	60
Total hardwoods	156,962	33,000	7,906	1,271	12,066	2,429	3,809	640	9,169	2,091
All species	160,013	34,224	8,492	1,508	12,077	2,430	3,809	640	9,169	2,091

(Table 35 cont. on next page)

(Table 35 cont.)

Species	Hickory		Laclede		Maties		Miller		Morgan	
	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber
	Cords	Thousand bd. ft.[1/]	Cords	Thousand bd. ft.[1/]	Cords	Thousand bd. ft.[1/]	Cords	Thousand bd. ft.[1/]	Cords	Thousand bd. ft.[1/]
Softwoods:										
Shortleaf pine	--	--	--	--	--	1	--	--	--	--
Eastern redcedar	649	259	--	--	6	3	1,179	472	242	98
Total softwoods	649	259	--	--	6	4	1,179	472	242	98
Hardwoods:										
Select white oaks	860	205	2,820	769	8,499	1,756	2,260	599	1,993	581
Other white oaks	1,788	270	4,061	679	6,285	1,105	3,233	541	3,312	574
Select red oaks	15	4	175	49	299	59	73	14	20	5
Red oaks	1,062	148	3,707	758	4,665	812	2,185	314	1,763	230
Hickory B	272	45	933	234	1,624	229	716	105	396	53
Hard maple	--	--	253	93	--	--	--	--	--	--
Soft maple	--	--	25	14	215	98	228	101	405	173
Tupelo and blackgum	--	--	--	--	25	2	--	--	--	--
Ash	--	--	127	51	468	163	228	72	203	83
Sycamore	38	20	101	49	1,987	918	304	121	886	379
Cottonwood	13	6	--	--	620	290	--	2	38	17
River birch	--	--	--	--	--	--	--	--	--	--
Black walnut	223	43	294	43	363	85	272	45	299	53
Black cherry	--	--	25	15	51	30	--	--	--	--
Elm	587	82	913	129	749	80	876	109	755	79
Other hardwoods	185	33	315	41	341	50	294	41	584	176
Total hardwoods	5,043	856	13,749	2,924	26,191	5,677	10,669	2,064	10,654	2,403
All species	5,692	1,115	13,749	2,924	26,197	5,681	11,848	2,536	10,896	2,501

(Table 35 cont. on next page)

(Table 35 cont.)

Species	Phelps		Polk		Pulaski		St. Clair	
	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber	Growing stock	Sawtimber
	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/	Cords	Thousand bd. ft.[1]/
Softwoods:								
Shortleaf pine	--	--	--	--	34	14	--	--
Eastern redcedar	11	2	--	--	333	137	--	--
Total softwoods	11	2	--	--	367	151	--	--
Hardwoods:								
Select white oaks	4,188	994	1,202	286	4,014	1,058	742	175
Other white oaks	5,101	819	1,666	266	4,439	803	1,949	283
Select red oaks	711	158	29	7	550	160	49	13
Red oaks	10,192	2,040	1,025	157	7,874	2,017	1,587	275
Hickory B	1,535	355	226	31	1,447	402	275	39
Hard maple	13	6	89	37	--	--	--	--
Soft maple	13	5	--	--	--	--	25	15
Tupelo and blackgum	--	2	--	--	--	--	--	--
Ash	13	7	--	--	38	9	13	6
Sycamore	1,557	718	89	42	975	431	203	89
Cottonwood	--	3	--	--	--	--	13	4
River birch	25	16	--	--	--	--	--	2
Black walnut	289	35	509	155	271	35	289	55
Black cherry	--	1	--	--	--	--	--	--
Elm	871	91	551	82	922	116	913	163
Other hardwoods	351	58	230	31	344	50	299	43
Total hardwoods	24,859	5,308	5,616	1,094	20,874	5,081	6,357	1,162
All species	24,870	5,310	5,616	1,094	21,241	5,232	6,357	1,162

1/ International 1/4-inch rule.

Table 36.—*Annual mortality of growing stock and sawtimber on commercial forest land, by cause and softwoods and hardwoods, Northwestern Ozarks, Missouri, 1971*

Cause	Growing stock			Sawtimber		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cubic feet			Thousand board feet[1/]		
Disease	369	--	369	1,408	--	1,408
Suppression	185	--	185	--	--	--
Unknown and other	81	--	81	--	--	--
Logging	104	--	104	554	--	554
All causes	739	--	739	1,962	--	1,962

1/ International 1/4-inch rule.

Table 37.--*Annual mortality of growing stock and sawtimber on commercial forest land, by species, Northwestern Ozarks, Missouri, 1971*

Species	Growing stock	Sawtimber
	Thousand cubic feet	Thousand board feet[1/]
Hardwoods:		
Select white oaks	69	--
Select red oaks	113	554
Red oaks	185	554
Other red oaks	87	473
Sycamore	116	--
Elm	169	381
Total hardwoods	739	1,962

1/ International 1/4-inch rule.

Table 38.--*Output of timber products by source of material and softwoods and hardwoods, Northwestern Ozarks, Missouri, 1969*

Product and species group	Standard unit[1/]	Total		Roundwood products				Plant byproducts	
				Growing stock		Nongrowing stock			
		No. of units	M cu. ft.	No. of units	M cu. ft.	No. of units	M cu. ft.	No. of units	M cu. ft.
Saw logs:	M bd. ft.								
Softwood		802	168	802	168	--	--	--	--
Hardwood		20,615	3,594	14,674	2,563	5,941	1,031	--	--
Total		21,417	3,762	15,476	2,731	5,941	1,031	--	--
Veneer logs:	M bd. ft.								
Softwood		--	--	--	--	--	--	--	--
Hardwood		222	49	140	31	82	18	--	--
Total		222	49	140	31	82	18	--	--
Cooperage logs:	M bd. ft.								
Softwood		--	--	--	--	--	--	--	--
Hardwood		4,518	744	4,093	674	425	70	--	--
Total		4,518	744	4,093	674	425	70	--	--
Pulpwood:	Std. cords								
Softwood		--	--	--	--	--	--	--	--
Hardwood		1,278	101	--	--	--	--	1,278	101
Total		1,278	101	--	--	--	--	1,278	101
Poles:	M pieces								
Softwood		200	--	200	--	--	--	--	--
Hardwood		--	--	--	--	--	--	--	--
Total		200	--	200	--	--	--	--	--
Mine timbers:	M cu. ft.								
Softwood		--	--	--	--	--	--	--	--
Hardwood		10	10	7	7	3	3	--	--
Total		10	10	7	7	3	3	--	--
Posts:	M pieces								
Softwood		4	--	3	--	1	--	--	--
Hardwood		395	213	291	154	104	59	--	--
Total		399	213	294	154	105	59	--	--
Charcoal wood:	Std. cords								
Softwood		--	--	--	--	--	--	--	--
Hardwood		62,472	4,362	18,750	1,309	40,208	2,807	3,514	246
Total		62,472	4,362	18,750	1,309	40,208	2,807	3,514	246
Other:[2/]	M cu. ft.								
Softwood		386	386	338	338	--	--	48	48
Hardwood		283	283	166	166	--	--	117	117
Total		669	669	504	504	--	--	165	165
Fuelwood:	Std. cords								
Softwood		134	10	54	4	80	6	--	--
Hardwood		74,405	4,825	22,639	1,468	48,827	3,166	2,939	191
Total		74,539	4,835	22,693	1,472	48,907	3,172	2,939	191
All products:	M cu. ft.								
Softwood		564	564	510	510	6	6	48	48
Hardwood		14,181	14,181	6,372	6,372	7,154	7,154	655	655
Total		14,745	14,745	6,882	6,882	7,160	7,160	703	703

1/ M (meaning thousand) board feet by International 1/4-inch rule. Cords are on a roughwood, 128-cubic-foot basis.
2/ Other (industrial production) includes handle bolts, shaving bolts, heading stock, etc.

Table 39.--*Forest products harvested by ownership class and product, Northwestern Ozarks, Missouri, 1969*

Ownership class	Saw logs	Cooperage logs	Veneer logs	Pulpwood	Charcoal wood	Posts	Fuelwood	Poles	Mine timbers	Handle bolts	Miscellaneous
	M bd.ft.[1]	M bd.ft.[1]	M bd.ft.[1]	Cords[2]	Cords[2]	M pieces	Cords[2]	Pieces	M cu.ft.	M bd.ft.[1]	M cu.ft.
Federal:											
National Forest:											
Softwoods	16	—	--	--	--	--	--	200	--	—	--
Hardwoods	2,506	—	24	—	1,248	1	40	--	—	—	—
U.S. Army:											
Hardwoods	475	--	--	--	--	—	--	--	--	--	--
Corps of Engineers:											
Hardwoods	95	--	--	--	--	--	--	--	--	--	--
Total	3,092	--	24	--	1,248	1	40	200	--	--	--
State:											
Softwoods	--	--	--	--	--	1	--	—	--	—	--
Hardwoods	--	--	--	--	24	--	--	--	--	--	--
Total	--	--	--	--	24	1	--	--	--	--	--
Private:											
Industrial:											
Hardwoods	12	--	--	--	10	--	--	--	—	--	--
Farm and other:											
Softwoods	786	--	--	--	—	3	134	--	--	--	338
Hardwoods	17,527	4,518	198	--	57,676	394	71,426	--	10	--	166
Total	18,325	4,518	198	--	57,686	397	71,560	--	10	--	504
All owners:											
Softwoods	802	--	--	--	--	4	134	200	--	--	338
Hardwoods	20,615	4,518	222	--	58,958	395	71,466	--	10	--	166
Total	21,417	4,518	222	--	58,958	399	71,600	200	10	--	504

1/ International 1/4-inch rule.
2/ Standard cords, rough wood basis.

Table 40.--*Volume of primary plant residue, by kind of material and type of use, Northwestern Ozarks, Missouri, 1969*

(Thousand cubic feet)

Source industry and kind of residue	Volume by type of use								
	Fiber[1]		Charcoal		Fuel[2]		Other[3]		Not used[4]
	Hardwoods	Softwoods	Hardwoods	Softwoods	Hardwoods	Softwoods	Hardwoods	Softwoods	Hardwoods
Lumber:									
Coarse	22	--	246	--	141	30	--	3	73
Fine	--	--	--	--	13	18	84	2	235
Total	22	--	246	--	154	48	84	5	308
All other:									
Coarse	79	--	--	--	4	--	--	--	--
Fine	--	--	--	--	33	--	33	--	72
Total	79	--	--	--	37	--	33	--	72
All industries:									
Coarse	101	--	246	--	145	30	--	3	73
Fine	--	--	--	--	46	18	117	2	307
Total	101	--	246	--	191	48	117	5	380

1/ For manufacture of pulp, hardboard, or roofing felt.
2/ All residue used for industrial or domestic fuel whether sold or given away.
3/ Includes uses such as livestock bedding, mulch, small dimension, and specialty items.
4/ Includes residue burned as waste.

Table 41.--*Timber products output from roundwood, by species and product, Northwestern Ozarks, Missouri, 1969*

Species	Saw logs		Veneer logs		Cooperage logs		Charcoal wood		Other products[3]	All products
	M bd. ft.[1]	M cu. ft.	M bd. ft.[1]	M cu. ft.	M bd. ft.[1]	M cu. ft.	Cords[2]	M cu. ft.	M cu. ft.	M cu. ft.
Softwoods:										
Shortleaf pine	30	5	0	0	0	0	0	0	0	5
Eastern redcedar	772	163	0	0	0	0	0	0	348	511
Total softwoods	802	168	0	0	0	0	0	0	348	516
Hardwoods:										
White oaks	4,460	796	0	0	4,518	744	29,737	2,079	3,394	7,013
Red oaks	2,361	420	0	0	0	0	3,169	221	270	911
Black oak	7,036	1,253	0	0	0	0	17,560	1,229	567	3,049
Hickory	774	131	74	16	0	0	6,842	481	220	848
Hard maple	156	25	0	0	0	0	13	0	0	25
Soft maple	783	122	0	0	0	0	15	0	26	148
Blackgum	2	0	0	0	0	0	67	5	0	5
Ash	460	77	0	0	0	0	496	33	12	122
Cottonwood	294	45	0	0	0	0	0	0	3	48
Black walnut	841	182	148	33	0	0	36	1	0	216
Black cherry	49	7	0	0	0	0	43	2	0	9
Elm	126	20	0	0	0	0	634	43	233	296
Birch	20	2	0	0	0	0	0	0	0	2
Sycamore	3,121	494	0	0	0	0	346	22	74	590
Other hardwoods	132	20	0	0	0	0	0	0	224	244
Total hardwoods	20,615	3,594	222	49	4,518	744	58,958	4,116	5,023	13,526
All species	21,417	3,762	222	49	4,518	744	58,958	4,116	5,371	14,042

1/ International 1/4-inch rule.
2/ Standard cords, rough wood basis.
3/ Includes posts, fuelwood, shaving bolts, heading bolts, etc.

Table 42.--*Average annual allowable cut for 1972-1981 from harvest cuttings and thinnings on commercial forest land, by species and kind of material, Northwestern Ozarks, Missouri*

Species	Growing stock[1/]			Sawtimber[1/]	Rough and rotten trees		
	Total	Poletimber trees	Sawtimber trees	Total	Total	Short-log trees	Other
	Cords			Thousand board feet[2/]	Cords		
Softwoods:							
Shortleaf pine	848	--	848	480	63	--	63
Eastern redcedar	89	38	51	23	--	--	--
Total softwoods	937	38	899	503	63	--	63
Hardwoods:							
Select white oaks	68,354	17,012	51,342	18,999	42,519	9,190	33,329
Other white oaks	45,114	15,582	29,532	10,717	31,114	5,291	25,823
Select red oaks	14,152	5,051	9,101	3,368	4,012	544	3,468
Red oaks	47,759	6,974	40,785	15,518	34,873	7,076	27,797
Other red oaks	2,494	1,697	797	272	9,240	974	8,266
Hickory A	10,165	4,456	5,709	1,949	3,646	380	3,266
Hickory B	11,139	7,519	3,620	1,373	5,013	785	4,228
Hard maple	--	--	--	--	241	1	240
Soft maple	747	--	747	354	1,519	--	1,519
Tupelo and blackgum	1,329	721	608	221	--	--	--
Ash	2,443	557	1,886	694	2,646	633	2,013
Sycamore	5,532	1,330	4,202	1,671	1,392	911	481
Black walnut	1,354	936	418	156	1,722	494	1,228
Black cherry	--	--	--	--	532	--	532
Elm	1,304	1,051	253	89	1,253	--	1,253
Other hardwoods	1,722	735	987	363	2,911	--	2,911
Total hardwoods	213,608	63,621	149,987	55,744	142,633	26,279	116,354
All species	214,545	63,659	150,886	56,247	142,696	26,279	116,417

1/ Cuttings of less than 3 cords per acre, or the equivalent in board feet, are excluded.
2/ International 1/4-inch rule.

Table 43.--*Average annual allowable cut of growing stock for 1972-1981 from harvest cuttings and thinnings on commercial forest land, by species and forest type, Northwestern Ozarks, Missouri* 1/

(Thousand cubic feet)

Species	All forest types	Eastern redcedar-hardwood	Post-blackjack oak	Black-scarlet oak	White oak	Elm-ash-cottonwood	Maple-beech
Softwoods:							
Shortleaf pine	67	--	--	67	--	--	--
Eastern redcedar	7	7	--	--	--	--	--
Total softwoods	74	7	--	67	--	--	--
Hardwoods:							
Select white oaks	5,400	--	557	1,677	3,107	59	--
Other white oaks	3,564	2	3,140	348	74	--	--
Select red oaks	1,118	--	59	761	298	--	--
Red oaks	3,773	--	586	2,740	429	18	--
Other red oaks	197	--	118	57	--	22	--
Hickory A	803	3	105	353	90	252	--
Hickory B	880	--	593	199	88	--	--
Soft maple	59	--	--	--	--	59	--
Tupelo and blackgum	105	--	--	57	48	--	--
Ash	193	--	--	--	42	151	--
Sycamore	437	7	--	86	55	289	--
Black walnut	107	2	--	2	103	--	--
Elm	103	--	--	64	--	39	--
Other hardwoods	136	9	--	--	56	71	--
Total hardwoods	16,875	23	5,158	6,344	4,390	960	--
All species	16,949	30	5,158	6,411	4,390	960	--

1/ Cuttings of less than 240 cubic feet per acre are excluded.

Table 44.--*Average annual allowable cut of growing stock for 1972-1981 from harvest cuttings and thinnings on commercial forest land, by species and stand-volume class, Northwestern Ozarks, Missouri*

(Thousand cubic feet)

Species	All classes	Stand-volume class[1] (cubic feet per acre)				
		240-399	400-799	800-1,199	1,200-1,599	1,600+
Softwoods:						
Shortleaf pine	67	--	--	67	--	--
Eastern redcedar	7	--	--	7	--	--
Total softwoods	74	--	--	74	--	--
Hardwoods:						
Select white oaks	5,400	327	2,051	1,238	1,784	--
Other white oaks	3,564	153	1,957	297	204	953
Select red oaks	1,118	57	472	416	173	--
Red oaks	3,773	367	1,701	1,495	210	--
Other red oaks	197	22	134	41	--	--
Hickory A	803	19	263	485	36	--
Hickory B	880	124	654	36	66	--
Soft maple	59	--	--	59	--	--
Tupelo and blackgum	105	--	48	57	--	--
Ash	193	73	42	78	--	--
Sycamore	437	7	279	151	--	--
Black walnut	107	2	38	31	36	--
Elm	103	--	20	19	64	--
Other hardwoods	136	38	56	42	--	--
Total hardwoods	16,875	1,189	7,715	4,445	2,573	953
All species	16,949	1,189	7,715	4,519	2,573	953

1/ Cuttings of less than 240 cubic feet per acre are excluded.

Table 45.—*Average annual allowable cut by harvest cuttings of growing stock for 1972-1981 on commercial forest land, by species and stand-volume class, Northwestern Ozarks, Missouri*

(Thousand cubic feet)

Species	All classes	Stand-volume class[1] (cubic feet per acre)				
		240-399	400-799	800-1,199	1,200-1,599	1,600+
Softwoods:						
Shortleaf pine	67	--	--	67	--	--
Eastern redcedar	7	--	--	7	--	--
Total softwoods	74	--	--	74	--	--
Hardwoods:						
Select white oaks	5,056	299	1,913	1,060	1,784	--
Other white oaks	3,537	153	1,941	286	204	953
Select red oaks	1,080	57	434	416	173	--
Red oaks	3,624	287	1,644	1,483	210	--
Other red oaks	197	22	134	41	--	--
Hickory A	798	14	263	485	36	--
Hickory B	857	124	643	24	66	--
Soft maple	59	--	--	59	--	--
Tupelo and blackgum	105	--	48	57	--	--
Ash	193	73	42	78	--	--
Sycamore	437	7	279	151	--	--
Black walnut	105	2	36	31	36	--
Elm	103	--	20	19	64	--
Other hardwoods	136	38	56	42	--	--
Total hardwoods	16,287	1,076	7,453	4,232	2,573	953
All species	16,361	1,076	7,453	4,306	2,573	953

1/ Cuttings of less than 240 cubic feet per acre are excluded.

Table 46.--*Average annual allowable cut by thinnings of growing stock for 1972-1981 on commercial forest land, by species and stand-volume class, Northwestern Ozarks, Missouri*

(Thousand cubic feet)

Species	All classes	Stand-volume class[1] (cubic feet per acre)		
		240-399	400-799	800-1,199
Hardwoods:				
Select white oaks	344	28	138	178
Other white oaks	27	--	16	11
Select red oaks	38	--	38	--
Red oaks	149	80	57	12
Hickory A	5	5	--	--
Hickory B	23	--	11	12
Black walnut	2	--	2	--
Total hardwoods	588	113	262	213
All species	588	113	262	213

1/ Cuttings of less than 240 cubic feet per acre are excluded.

Table 47.--*Average annual allowable cut of sawtimber[1] for 1972-1981, from harvest cuttings and thinnings on commercial forest land, by species and forest type, Northwestern Ozarks, Missouri*

(Thousand board feet)[2]

Species	All forest types	Eastern redcedar	Eastern redcedar-hardwood	Post-blackjack oak	Black-scarlet oak	White oak	Elm-ash-cottonwood	Maple-beech
Softwoods:								
Shortleaf pine	480	--	--	--	480	--	--	--
Eastern redcedar	87	64	23	--	--	--	--	--
Total softwoods	567	64	23	--	480	--	--	--
Hardwoods:								
Select white oaks	19,124	--	23	2,507	5,465	10,836	293	--
Other white oaks	10,771	--	35	9,380	1,253	103	--	--
Select red oaks	3,376	--	--	251	2,480	645	--	--
Red oaks	15,747	--	--	1,770	12,076	1,712	88	101
Other red oaks	272	--	--	162	--	--	110	--
Hickory A	1,959	--	15	368	774	--	802	--
Hickory B	1,421	--	--	1,019	354	--	--	48
Soft maple	354	--	--	--	--	--	354	--
Tupelo and blackgum	233	--	--	--	12	221	--	--
Ash	694	--	--	--	--	88	606	--
Sycamore	1,671	--	--	--	395	270	1,006	--
Black walnut	165	9	7	--	--	149	--	--
Elm	89	--	--	--	--	--	89	--
Other hardwoods	385	--	53	--	--	186	146	--
Total hardwoods	56,261	9	133	15,457	22,809	14,210	3,494	149
All species	56,828	73	156	15,457	23,289	14,210	3,494	149

1/ Cuttings of less than 3 cords per acre, or the equivalent in board feet, are included.
2/ International 1/4-inch rule.

Table 48.--*Average annual allowable cut of sawtimber*[1] *for 1972-1981, from harvest cuttings and thinnings on commercial forest land, by species and stand-volume class, Northwestern Ozarks, Missouri*

(Thousand board feet)[2]

Species	All classes	Stand-volume class (board feet per acre)			
		0-1,499	1,500-2,499	2,500-4,999	5,000-7,499
Softwoods:					
Shortleaf pine	480	--	--	480	--
Eastern redcedar	87	87	--	--	--
Total softwoods	567	87	--	480	--
Hardwoods:					
Select white oaks	19,124	6,087	3,989	9,048	--
Other white oaks	10,771	3,782	2,733	643	3,613
Select red oaks	3,376	483	1,136	1,757	--
Red oaks	15,747	5,181	3,900	6,666	--
Other red oaks	272	272	--	--	--
Hickory A	1,959	370	1,174	415	--
Hickory B	1,421	1,176	245	--	--
Soft maple	354	--	354	--	--
Tupelo and blackgum	233	12	--	221	--
Ash	694	324	370	--	--
Sycamore	1,671	465	1,206	--	--
Black walnut	165	165	--	--	--
Elm	89	89	--	--	--
Other hardwoods	385	239	146	--	--
Total hardwoods	56,261	18,645	15,253	18,750	3,613
All species	56,828	18,732	15,253	19,230	3,613

1/ Cuttings of less than 3 cords per acre, or the equivalent in board feet, are included.

2/ International 1/4-inch rule.

Table 49.--*Average annual allowable cut by harvest cuttings of sawtimber*[1] *for 1972-1981 on commercial forest land, by species and stand-volume class, Northwestern Ozarks, Missouri*

(Thousand board feet)[2]

Species	All classes	Stand-volume class (board feet per acre)			
		0-1,499	1,500-2,499	2,500-4,999	5,000-7,499
Softwoods:					
Shortleaf pine	480	--	--	480	--
Eastern redcedar	87	87	--	--	--
Total softwoods	567	87	--	480	--
Hardwoods:					
Select white oaks	18,501	5,464	3,989	9,048	--
Other white oaks	10,771	3,782	2,733	643	3,613
Select red oaks	3,246	353	1,136	1,757	--
Red oaks	15,386	4,820	3,900	6,666	--
Other red oaks	272	272	--	--	--
Hickory A	1,959	370	1,174	415	--
Hickory B	1,421	1,176	245	--	--
Soft maple	354	--	354	--	--
Tupelo and blackgum	233	12	--	221	--
Ash	694	324	370	--	--
Sycamore	1,671	465	1,206	--	--
Black walnut	165	165	--	--	--
Elm	89	89	--	--	--
Other hardwoods	385	239	146	--	--
Total hardwoods	55,147	17,531	15,253	18,750	3,613
All species	55,714	17,618	15,253	19,230	3,613

1/ Cuttings of less than 3 cords per acre, or the equivalent in board feet, are included.

2/ International 1/4-inch rule.

Table 50.--*Average annual allowable cut by thinnings of sawtimber*[1] *for 1972-1981 on commercial forest land, by species and stand-volume class, Northwestern Ozarks, Missouri*

(Thousand board feet)[2]

Species	All classes	Stand-volume class (board feet per acre)
		0-1,499
Hardwoods:		
Select white oaks	623	623
Select red oaks	130	130
Red oaks	361	361
Total hardwoods	1,114	1,114
All species	1,114	1,114

1/ Cuttings of less than 3 cords per acre, or the equivalent in board feet, are included.

2/ International 1/4-inch rule.

Table 51.--*Area of allowable cut*[1/] *by harvest cuttings on commercial forest land for 1972-1981, by forest type and stand-age class, Northwestern Ozarks, Missouri*

(Thousand acres)

Forest type	All ages	Stand-age class (years)									
		10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-119	120-139
Eastern redcedar-hardwood	.7	--	--	--	--	.3	.4	--	--	--	--	--
Shortleaf pine-oak	6.8	6.0	--	--	--	.4	.4	--	--	--	--	--
Post-blackjack oak	127.1	--	--	--	--	--	40.7	21.6	21.6	32.4	10.8	--
Black-scarlet oak	105.6	--	--	--	--	--	.8	27.5	22.0	38.7	16.6	--
White oak	62.2	--	--	--	--	--	--	28.4	17.0	11.2	--	5.6
Elm-ash-cottonwood	12.8	--	--	--	--	--	7.1	--	5.7	--	--	--
Maple-beech	1.2	--	--	--	--	--	1.2	--	--	--	--	--
All forest types	316.4	6.0	--	--	--	.7	50.6	77.5	66.3	82.3	27.4	5.6

1/ For a 10-year period.

Table 52.--*Area of allowable cut*[1/] *by thinnings on commercial forest land for 1972-1981, by forest type and stand-age class, Northwestern Ozarks, Missouri*

(Thousand acres)

Forest type	All ages	Stand-age class (years)					
		10-19	20-29	30-39	40-49	50-59	60-69
Black-scarlet oak	45.4	5.7	17.3	5.8	14.3	2.4	--
White oak	22.3	--	5.6	5.8	5.4	--	5.5
Elm-ash-cottonwood	7.9	--	--	--	--	5.4	--
All forest types	77.6	5.7	22.9	11.6	20.1	11.7	5.5

1/ For a 10-year period.

PRINCIPAL TREE SPECIES IN MISSOURI'S NORTHWESTERN OZARKS UNIT[3/]

SOFTWOOD SPECIES

Shortleaf pine . . . . . *Pinus echinata*
Eastern redcedar . . . . . *Juniperus virginiana*

HARD HARDWOOD SPECIES

Ashes:
- White ash . . . . . *Fraxinus americana*
- Green ash . . . . . *Fraxinus pennsylvanica*
- Blue ash . . . . . *Fraxinus quadrangulata*

Black walnut . . . . . *Juglans nigra*

Hard maples:
- Sugar maple . . . . . *Acer saccharum*

Hickory group A:
- Pecan . . . . . *Carya illinoensis*
- Shellbark hickory . . . . . *Carya laciniosa*
- Shagbark hickory . . . . . *Carya ovata*
- Mockernut hickory . . . . . *Carya tomentosa*

Hickory group B:
- Bitternut hickory . . . . . *Carya cordiformis*
- Pignut hickory . . . . . *Carya glabra* var. *glabra*
- Black hickory . . . . . *Carya texana*

River birch . . . . . *Betula nigra*

Select white oaks:
- White oak . . . . . *Quercus alba*
- Bur oak . . . . . *Quercus macrocarpa*
- Swamp chestnut oak . . . . . *Quercus michauxii*
- Chinkapin oak . . . . . *Quercus muehlenbergii*

White oaks:
- Swamp white oak . . . . . *Quercus bicolor*

Other white oaks:
- Post oak . . . . . *Quercus stellata* var. *stellata*

Select red oaks:
- Northern red oak . . . . . *Quercus rubra*
- Shumard oak . . *Quercus shumardii* var. *shumardii*

Red oaks:
- Scarlet oak . . . . . *Quercus coccinea*
- Southern red oak . . *Quercus falcata* var. *falcata*
- Black oak . . . . . *Quercus velutina*

Other red oaks:
- Shingle oak . . . . . *Quercus imbricaria*
- Blackjack oak . . . . . *Quercus marilandica*
- Pin oak . . . . . *Quercus palustris*
- Willow oak . . . . . *Quercus phellos*

Other hard hardwoods:
- Black locust . . . . . *Robinia pseudoacacia*
- Common persimmon . . . . . *Diospyros virginiana*
- Flowering dogwood . . . . . *Cornus florida*
- Honeylocust . . . . . *Gleditsia triacanthos*
- Osage-orange . . . . . *Maclura pomifera*
- Red mulberry . . . . . *Morus rubra*
- Sugarberry . . . . . *Celtis laevigata*

SOFT HARDWOOD SPECIES

American sycamore . . . . . *Platanus occidentalis*
Black cherry . . . . . *Prunus serotina*
Butternut . . . . . *Juglans cinerea*

Elms:
- American elm . . . . . *Ulmus americana*
- Slippery elm . . . . . *Ulmus rubra*

Soft maples:
- Red maple . . . . . *Acer rubrum* var. *rubrum*
- Silver maple . . . . . *Acer saccharinum*

Sweetgum . . . . . *Liquidambar styraciflua*

Tupelo and blackgum:
- Blackgum . . . . . *Nyssa sylvatica* var. *biflora*

Other soft hardwoods:
- Black willow . . . . . *Salix nigra*
- Boxelder . . . . . *Acer negundo*
- Hackberry . . . . . *Celtis occidentalis*
- Kentucky coffeetree . . . . . *Gymnocladus dioicus*
- Sassafras . . . . . *Sassafras albidum*

3/ The common and scientific names are based on "Check List of Native and Naturalized Trees of the United States (Including Alaska)," by Elbert L. Little, Jr., U.S. Dep. Agric., Agric. Handb. 41, 472 p. 1953.

APPENDIX

ACCURACY OF SURVEY

Forest survey information is based on a sampling procedure designed to provide reliable statistics at the State and Survey Unit levels. Consequently, the reported figures are estimates only. However, a measure of reliability of these figures is given by sampling errors. These sampling errors may be interpreted as meaning that the chances are two out of three that if a 100-percent inventory had been taken, using the same methods, the results would have been within the limits indicated.

For example, the estimated area of commercial forest land in the Northwestern Ozarks Unit in 1972, 1,920.0 thousand acres, has a sampling errors of ±2.4 percent (±46.1 thousand acres). The commercial forest area from a 100-percent inventory, then, would be expected to fall between 1,873.9 and 1,966.1 thousand acres (1,920.0 ± 46.1), there being a one-in-three chance that this is not the case.

Following are sampling errors for total estimated volume, net growth, and removals for both growing stock and sawtimber, and for area of commercial forest land during the 1972 Northwestern Ozarks Survey:

Item	*Northwestern Ozarks Unit totals*	*Sampling error (Percent)*
Growing stock:		
Volume	8,590.8 M cords	4.9
Growth	212.1 M cords	6.3
Removals	160.0 M cords	9.2
Sawtimber:		
Volume	1,584.1 MM bd. ft.	6.8
Growth	33.1 MM bd. ft.	9.4
Removals	34.2 MM bd. ft.	8.2
Commercial forest land	1,920.0 M acres	2.4

As survey data are broken down into units smaller than State or Survey Unit totals, the sampling error increases. The smaller the breakdown, the larger the sampling error. For example, the sampling error for area of commercial forest land in a particular county is higher than that for total commercial forest area in the Survey Unit. An approximation of the increasing sampling error can be obtained from table 53, which shows the sampling errors associated with estimates smaller

Table 53.--*Sampling errors*[1/] *for estimates smaller than unit totals of volume, net growth, and removals, and of area of commercial forest land, Northwestern Ozarks, Missouri, 1972*

Sampling error (percent)	Commercial forest	Growing Stock			Sawtimber		
		Inventory	Growth	Removals	Inventory	Growth	Removals
	Thousand acres	Thousand cords			Million board feet		
1	12,400.9						
2	3,100.2						
3	1,377.9						
4	775.1	14,790.0			5,113.8		
5	496.0	9,465.6	371.0	545.6	3,272.8	131.6	92.2
10	124.0	2,366.4	92.7	136.7	818.2	32.9	23.1
15	55.1	1,051.7	41.2	60.8	363.6	14.6	10.2
20	31.0	591.6	23.2	34.2	204.6	8.2	5.8
25	19.8	378.6	14.8	21.5	130.9	5.3	3.7
50	5.0	94.7	3.7	5.1	32.7	1.3	.9
100	1.2	23.7	.9	1.3	8.2	.3	.2

1/ At the 68-percent probability level.

than totals in the Northwestern Ozarks Unit.

SURVEY PROCEDURE

The major steps in the survey of the Northwestern Ozarks Unit were as follows:

1. A total of 24,506 1-acre points distributed systematically across aerial photos of the entire area were observed. These points were classified as either forest land (12,192) or nonforest land (12,314) in order to make a preliminary estimate of forest area. Next, 4,609 of the forest points were stereoclassified as to forest type, stand-size class, and density. Then 449 points classed as forest and 452 points classed as nonforest were examined on the ground to correct the preliminary area estimate for errors in classification and for actual changes in land use since the photos were taken. Some of the points examined were locations of permanent sample plots (each of which contained one variable-radius plot with basal area factor five) established during the 1959 survey. Of the 345 points determined to be on commercial forest land from ground examination, 195 were at previously unsampled locations and 10-point variable-radius plots (basal area factor 37.5) were established uniformly over the sample acre. The remaining 150 points were at formerly established permanent plot locations and were remeasured by superimposing 10-point variable-radius plots (basal area factor 37.5) over the existing plot in addition to remeasuring the basal area factor five plot. Tree measurements made on new and remeasured plots were the basis for estimates of timber volume, growth, mortality, number of trees, and other forest classifications.

2. Statistics on timber utilization in 1969 were obtained from mill surveys and from remeasurement of permanent sample plots. The Missouri Department of Conservation conducted a canvass of resident sawmills, veneer mills, and other primary wood-using plants. The North Central Forest Experiment Station canvassed resident pulpmills, and the underground mining industry in Missouri, as well as out-of-State sawmills, pulpmills, and veneer mills to determine their use of timber from Missouri. Fuelwood and fencepost output was based on U.S. Census of Agriculture and Housing figures, a canvass of public and industrial timber owners, and a canvass of resident wood-treating plants. Estimates of primary mill residue used for fuelwood were obtained from the canvass of Missouri primary wood-using plants. Timber cut for products by owner class was determined by a canvass of all public and industrial timber owners. The portion of timber cut unaccounted for by the latter owners was grouped under "farmer and other owners."

3. To develop wood utilization factors used in converting timber products output to timber removals for saw logs, veneer logs, cooperage logs, pulpwood, and charcoal wood, 486 felled trees throughout the State were measured. Factors for all other products were obtained during the 1959-1960 Missouri utilization study.

4. Field data were sent to St. Paul where they were edited, punched on cards and stored on magnetic tape for later machine sorting, computing, and tabulation.

ALLOWABLE CUT

Allowable cut is the estimated volume of timber on commercial forest land that could be cut annually for the next 10 years, while improving tree stocking and bringing about a more even distribution of age classes. In Missouri, annual allowable cut is shown separately as that from harvest cutting and from thinnings, and was determined by computer using an area control system for determining the number of acres to be cut annually.

The harvest cut of sawtimber was calculated from stands of forest types normally managed for sawtimber whose site index and age indicated they were ready for harvest, or would be within the next 10 years. Table 54 shows the site index used in these calculations for each forest type to determine whether the objective of management would be to grow sawtimber or pulpwood. Included also is the rotation age for each.

Stands that did not qualify for harvest during that period were checked to see if they were overstocked by basal-area standards, or would be within the next 10 years. Stands determined to be overstocked were "thinned" by the computer back to their recommended basal-area stocking level, and the volume of sawtimber trees "thinned" was added to the volume of allowable cut by thinnings of growing stock and sawtimber. The volume

Table 54.—*Forest type, site index, and rotation age, by management objective, used in calculation of annual allowable cut, Missouri, 1972*

Forest type	Site index	Rotation age	Management objective
		Years	
Shortleaf pine	50 or higher	60	Sawtimber
	Less than 50	40	Pulpwood
Shortleaf pine-oak	60 or higher	80	Sawtimber
	Less than 60	50	Pulpwood
Eastern redcedar	35 or higher	55	Sawtimber
	Less than 35	70	Sawtimber
Eastern recedar-hardwood	45 or higher	50	Sawtimber
	Less than 45	60	Sawtimber
Black-scarlet oak	60 or higher	80	Sawtimber
	Less than 60	50	Pulpwood
White oak	60 or higher	80	Sawtimber
	Less than 60	50	Pulpwood
Post-blackjack oak	All sites	50	Pulpwood
Oak-gum-cypress	All sites	60	Sawtimber
Cottonwood	All sites	30	Sawtimber
Elm-ash-cottonwood	All sites	50	Sawtimber
Maple-beech	All sites	90	Sawtimber

of poletimber trees "thinned" was added to the growing-stock allowable cut by thinnings. In scheduling thinnings, the computer program first "removes" rough and rotten trees, then short-log trees, and finally, growing-stock trees. The volume of allowable cut from rough, rotten, and short-log (rough) trees is kept separate from that from growing-stock trees.

The harvest cut of growing stock included that of sawtimber in addition to the volume from stands of forest types normally managed for pulpwood that were or would be rotation age within the next 10 years.

Allowable cut is based on the assumptions that all timber will be available and accessible when needed, and that a ready market will exist for every species, size, and grade of material harvested. Further, it assumes that the proper sequence of cutting is known and will be followed, and that logging practices employed will result in an improved forest. Because there is no way of guaranteeing that these assumptions will be carried out during the next 10 years, the allowable cut estimates should be compared with timber removals figures only in a general way.

LOG GRADE

In the Northwestern Ozarks Unit the butt log of every sawtimber tree (660 trees) on every permanent sample plot was log-graded. Additionally, all of the logs in a smaller sample of trees throughout the State (265 trees) were log-graded. The volume yield by log grade for each tree in the latter sample was used to distribute the volume of trees in the former sample into log-grade classes. The resulting volumes by log-grade classes were expanded to provide an estimate for the entire Unit.

Logs are graded on the basis of external characteristics as indicators of quality. Hardwood species were graded according to "Hardwood Log Grades for Standard Lumber and How To Use Them" published by the Forest Products Laboratory under the designation D1737A, 1961, and USDA Forest Service standards for hardwood tie and timber logs. The best 12-foot section of the lowest 16-foot hardwood log, or the best 12-foot upper section if the butt log did not meet minimum log-grade standards, was graded.

Shortleaf pine was graded according to "Interim Southern Pine Log Grades," USDA Forest Service, 1953. All other softwoods were graded according to "Specifications for Log Grades of Hardwoods and Softwoods," Northern Hemlock and Hardwood Association, 1947. The lowest 16-foot log in softwood trees or a shorter log down to 12 feet if a 16-foot butt log was not present, was graded.

Some Recent Forest Survey Reports Published by
the North Central Forest Experiment Station

Primary forest products industry and industrial roundwood production, Michigan, 1969, by James E. Blyth and Allen H. Boelter. USDA For. Serv. Resour. Bull. NC-12, 12 p., illus. 1971.

Kansas saw-log production jumps 38 percent from 1964 to 1969, by James E. Blyth and Leonard K. Gould. USDA For. Serv. Res. Note NC-128, 2 p., illus. 1971.

Wisconsin's 1968 timber resource--a perspective, by John S. Spencer, Jr. and Harry W. Thorne. USDA For. Serv. Resour. Bull. NC-15, 80 p., illus. 1972.

Missouri's primary forest products output and industries, 1969, by James E. Blyth and Robert Massengale. USDA For. Serv. Resour. Bull. NC-16, 15 p., illus. 1972.

Forest area in Wisconsin counties, 1968, by Burton L. Essex. USDA For. Serv. Res. Note NC-135, 4 p., illus. 1972.

Iowa saw-log production and sawmill industry, 1969, by James E. Blyth and William A. Farris. USDA For. Serv. Res. Note NC-136, 4 p., illus. 1972.

Timber volume in Wisconsin counties, by Arnold J. Ostrom. USDA For. Serv. Res. Note NC-145, 4 p., illus. 1972.

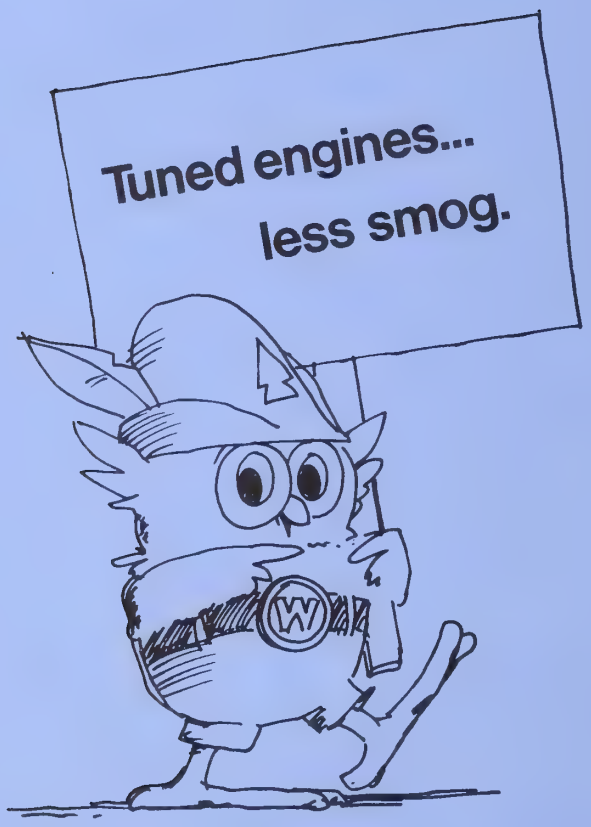
Pulpwood production in the North Central Region by county, 1971, by James E. Blyth. USDA For. Serv. Resour. Bull. NC-17, 21 p., illus. 1973.

Pulpwood production in the North Central Region by county, 1972, by James E. Blyth. USDA For. Serv. Resour. Bull. NC-18, 16 p., illus. 1973.

Lake States pulpwood production dips to 4 million cords in 1971, by James E. Blyth. USDA For. Serv. Res. Note NC-148, 3 p. 1973.

Local net timber volume equations for Wisconsin, by Jerold T. Hahn. USDA For. Serv. Res. Note NC-149, 4 p., illus. 1973.

Pulpwood production in the Lake States by county, 1972, by James E. Blyth. USDA For. Serv. Res. Note NC-152, 4 p. 1973.


Tuned engines...
less smog.

GLOSSARY OF TERMS

Used in Resource Bulletins Reporting

MISSOURI'S 1972 TIMBER RESOURCE

NORTH CENTRAL FOREST EXPERIMENT STATION
FOREST SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

Land-Use Classes

Gross area.--The entire area of land and water as determined by the Bureau of Census, 1960.

Land area.--The area of dry land and land temporarily or partially covered by water such as marshes, swamps, flood plains, streams, sloughs, and estuaries. Canals less than 1/8-mile wide, and lakes, reservoirs, and ponds smaller than 40 acres are included as land area. These figures are from the Bureau of Census, 1960.

Forest land.--Land at least 16.7 percent stocked by forest trees of any size, or formerly having such tree cover, and not currently developed for nonforest use. Includes afforested areas. The minimum forest area classified was 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, and clearings in forest areas were classed as forest if less than 120 feet in width.

Commercial forest land.--Forest land that is producing or is capable of producing crops of industrial wood and that is not withdrawn from timber utilization by statute or administrative regulation. This includes areas suitable for management to grow crops of industrial wood generally of a site quality capable of producing in excess of 20 cubic feet per acre of annual growth. This includes both inaccessible and inoperable areas.

Noncommercial forest land.--(a) Unproductive--forest land incapable of yielding crops of industrial wood because of adverse site conditions, (b) Productive-reserved--forest land withdrawn from commercial timber use through statute or administrative regulation, or exclusively used for Christmas tree production.

Nonforest land.--Land that has never supported forests, and land formerly forested where forest use is precluded by development for nonforest uses, such as cropland, improved pasture, residential areas, and city parks. Also includes improved roads and adjoining rights-of-way, powerline clearings, and certain areas of water classified by the Bureau of Census as land. Unimproved roads, streams, canals, and nonforest strips in forest areas must be more than 120 feet wide, and clearings in forest areas must be more than 1 acre in size, to qualify as nonforest land.

Ownership Classes

National forest.--Federal lands that have been designated by executive order or statute as national forests or purchase units, and other lands under the administration of the USDA Forest Service.

Other Federal.--Federal lands other than national forest.

State, county, and municipal.--Lands owned by States, counties, or local public agencies, or lands leased by them for more than 50 years.

Forest industry.--Lands owned by companies or individuals operating primary wood-using plants.

Farmer-owned.--Lands owned by operators of farms. A farm must include 10 or more acres from which the sale of agricultural products totals $50 or more annually, or if less than 10 acres, the yield must be at least $250 annually.

Miscellaneous private.--Privately owned lands other than forest industry- or farmer-owned.

Tree Classes

All live trees.--Growing-stock, rough and rotten trees 1 inch d.b.h. and larger.

Growing-stock trees.--All live trees of commercial species except rough and rotten trees.

Desirable trees.--Growing-stock trees having no serious defects in quality limiting present or prospective use, and of relatively high vigor and containing no pathogens that may result in death or serious deterioration before rotation age. These are trees that would be favored by forest managers in silvicultural operations.

Acceptable trees.--Trees meeting the standards for growing stock but not qualifying as desirable trees.

Sawtimber trees.--Growing-stock trees of commercial species containing at least a 12-foot saw log or two noncontiguous saw logs, each 8 feet or longer. At least 33 percent of the gross volume of the tree must be sound wood. Softwoods must be at least 9.0 inches d.b.h. and hardwoods at least 11.0 inches.

Poletimber trees.--Growing-stock trees of commercial species at least 5.0 inches d.b.h. but smaller than sawtimber size, and of good form and vigor.

Saplings.--Live trees of commercial species 1.0 to 5.0 inches d.b.h. and of good form and vigor.

Seedlings.--Live trees of commercial species less than 1.0 inch d.b.h. that are expected to survive according to regional standards. (Examples of seedlings not expected to survive are those that are diseased or heavily damaged by logging, browsing, or fire). Only softwood seedlings over 6 inches and hardwood seedlings over 1 foot in height are counted.

Rotten trees.--Live trees (any size) of commercial species that do not contain a merchantable 12-foot saw log or two noncontiguous 8-foot or longer saw logs, now or prospectively, because of rot (that is, when more than 50 percent of the cull volume of the tree is rotten).

Rough trees.--Live trees that do not contain at least one merchantable 12-foot saw log or two noncontiguous 8-foot or longer saw logs, now or prospectively, because of roughness and poor form, as well as all live noncommercial species.

Short-log (rough trees).--Sawtimber-sized trees of commercial species that contain at least one merchantable 8- to 11-foot saw log but not a 12-foot saw log.

Stocking

The degree of utilization of land by trees as measured in terms of basal area and/or the number of trees in a stand compared to the basal area and/or number of trees required to utilize fully the growth potential of the land.

A stocking percent of 100 indicates full utilization of the site and is equivalent to 80 square feet of basal area per acre in trees 5 inches d.b.h. and larger. In a stand of trees less than 5 inches d.b.h., a stocking percent of 100 would indicate that the present number of trees is sufficient to produce 80 square feet of basal area per acre when the trees do reach 5 inches d.b.h.

Stocking of all live trees, growing-stock trees, and desirable trees are recorded separately and stands are grouped into the following stocking classes.

Stocking Classes

Overstocked stands.--Stands in which stocking of trees is 133 percent or more.

Fully stocked stands.--Stands in which stocking of trees is from 100 to 133 percent.

Medium-stocked stands.--Stands in which stocking of trees is from 60 to 100 percent.

Poorly stocked stands.--Stands in which stocking of trees is from 16.7 to 60 percent.

Nonstocked areas.--Commercial forest land on which stocking of trees is less than 16.7 percent.

Area-Condition Classes

Class 10.--Areas fully stocked with desirable trees but not overstocked.

Class 20.--Areas fully stocked with desirable trees, but overstocked with all live trees.

Class 30.--Areas medium to fully stocked with desirable trees, and with less than 30 percent of the area controlled by other trees and/or inhibiting vegetation or surface conditions that will prevent occupancy by desirable trees.

Class 40.--Areas medium to fully stocked with desirable trees and with 30 percent or more of the area controlled by other trees and/or conditions that ordinarily prevent occupancy by desirable trees.

Class 50.--Areas poorly stocked with desirable trees, but fully stocked with growing-stock trees.

Class 60.--Areas poorly stocked with desirable trees, but with medium to full stocking of growing-stock trees.

Class 70.--Areas poorly stocked with desirable trees, and poorly stocked with growing-stock trees.

Stand-Size Classes

Stand.--A growth of trees on a minimum of 1 acre of forest land that is stocked by forest trees of any size.

Sawtimber stands.--Stands at least 16.7 percent stocked with growing-stock trees, with half or more of this stocking in sawtimber or poletimber trees and with sawtimber stocking at least equal to poletimber stocking.

Poletimber stands.--Stands at least 16.7 percent stocked with growing-stock trees, and with half or more of this stocking in sawtimber and/or poletimber trees and with poletimber stocking exceeding that of sawtimber.

Sapling-seedling stands.--Stands at least 16.7 percent stocked with growing-stock trees and with saplings and/or seedlings comprising more than half of this stocking.

Nonstocked areas.--Commercial forest land on which stocking of growing-stock trees is less than 16.7 percent.

Other Classifications

Site index.--An expression of forest site quality based on the height of a free-growing dominant or codominant tree of a representative species in the forest type at age 50.

Site classes.--A classification of forest land in terms of inherent capacity to grow crops of industrial wood expressed in cubic-foot growth per acre per year.

Stand-age.--Age of the main stand. Main stand refers to trees of the dominant forest type and stand-size class.

Basal area.--The area in square feet of the cross section at breast height of a single tree. When the basal area of all the trees in a stand are summed, the result is usually expressed as square feet of basal area per acre.

Forest Types

A classification of forest land based upon the species forming a plurality of live-tree stocking. Major forest types in Missouri are:

Shortleaf pine.--Forests in which shortleaf pine comprises a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Eastern redcedar.--Forests in which eastern redcedar comprises a plurality of the stocking. (Common associates include oak and hickory.)

Eastern redcedar-hardwood.--Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking but in which eastern redcedar comprises 25 to 50 percent of the stocking. (Common associates include gum, hickory, and yellow-poplar.)

Shortleaf pine-oak.--Forests in which upland oaks comprise a plurality of the stocking, but in which shortleaf pine comprises 25 to 50 percent of the stocking.

Post-blackjack oak.--Forests in which post oak or blackjack oak, singly or in combination, comprises a plurality of the stocking except where shortleaf pine or redcedar comprises 25 to 50 percent.

Black-scarlet oak.--Forests in which upland oaks or hickory, singly or in combination, comprises a plurality of the stocking except where shortleaf pine or redcedar comprises 25 to 50 percent, or where white oak or post and blackjack oak

comprise a plurality. (Common associates include yellow-poplar, elm, maple, and black walnut.)

White oak.--Forests in which white oak and other white oak species, singly or in combination, comprise a plurality of the stocking except where shortleaf pine or redcedar comprises 25 to 50 percent.

Oak-gum-cypress.--Bottomland forests in which bottomland oaks such as pin, swamp white, and shingle oaks, along with tupelo, blackgum, sweetgum, and cypress, singly or in combination, comprise a plurality of the stocking. (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood.--Forests in which elm, ash, or cottonwood, singly or in combination, comprises a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

Cottonwood.--Forests in which cottonwood comprises a plurality of the stocking.

Maple-beech.--Forests in which hard maple or beech, singly or in combination, comprises a plurality of the stocking. (Common associates include elm and basswood.)

Timber Volume

Volume of growing stock.--The volume of sound wood in the bole of growing-stock trees 5.0 inches d.b.h. and over, from a 1-foot stump to a minimum of 4.0-inch top diameter outside bark, or to the point where the central stem breaks into limbs. Growing-stock volumes are shown in cubic feet and cords. Conversion from one unit of measure to another may be accomplished by a factor of 79 cubic feet per solid wood cord.

Volume of sawtimber.--Net volume of the saw log portion of live sawtimber trees in board feet, International 1/4-inch rule, from stump to a minimum 7 inches top diameter outside bark for softwoods and 9 inches for hardwoods.

Upper stem portion.--That part of the bole of sawtimber trees above the merchantable sawtimber top to a minimum top diameter of 4.0 inches outside bark or to the point where the central stem breaks into limbs.

Growth and Mortality

Net annual growth of growing stock.--**Net annual growth of growing stock is the change in volume of sound wood that occurred during 1971 in growing-stock trees that were 5.0 inches d.b.h. or larger at the beginning of the year,**

plus

the volume of sound wood in growing-stock trees smaller than 5.0 inches d.b.h. at the beginning of the year that grew sufficiently during the year to be reclassified into the 5.0-inch-or-larger d.b.h. classes (ingrowth),

plus

the volume of sound wood in trees that had been classified either as rough or rotten trees at the beginning of the year but were reclassified during the year as growing-stock trees,

plus

the annual change in volume of sound wood that occurred during the year on growing-stock trees that died during the year,

plus

the annual change in volume of sound wood that occurred in growing-stock trees included among timber removals for the year (See glossary for timber removals from growing stock, p. 5),

plus

the annual change in volume of sound wood in trees that had been classified as growing stock at the beginning of the year but were reclassified during the year as rough or rotten trees. Only the volume change that occurred during the portion of the years the trees were classified as growing stock was included,

minus

the volume of sound wood in growing-stock trees that died from natural causes during the year, and

minus

the volume of sound wood in trees that had been classified as growing stock at the beginning of the year, but were reclassified during the year as rough or rotten trees.

Net annual growth of sawtimber.--Net annual growth of sawtimber is the change in volume of sound wood that occurred during 1971 in trees that were sawtimber size at the beginning of the year,

plus

the volume of sound wood in growing-stock trees smaller than sawtimber size at the beginning of the year that grew sufficiently during the year to be reclassified as sawtimber trees (ingrowth),

plus

the volume of sound wood in trees that had been classified either as rough or rotten trees at the beginning of the year, but were reclassified during the year as sawtimber trees,

plus

the annual change in volume of sound wood that occurred during the year on sawtimber trees that died during the year,

plus

the annual change in volume of sound wood that occurred in sawtimber trees included among timber removals for the year (see glossary for timber removals from sawtimber, p. 5),

plus

the annual change in volume of sound wood in trees that had been classified as sawtimber trees at the beginning of the year, but were reclassified during the year as rough or rotten trees. Only the volume change that occurred during the portion of the year the trees were classified as sawtimber was included,

minus

the volume of sound wood in sawtimber trees that died from natural causes during the year, and

minus

the volume of sound wood in trees that had been classified as sawtimber trees at the beginning of the year, but were reclassified during the year as rough or rotten trees.

Mortality of growing stock.--The volume of sound wood in growing-stock trees dying annually from natural causes. Natural causes include fire, insects, disease, animal damage, weather, and suppression.

Mortality of sawtimber.--The net board-foot volume of sawtimber trees dying annually from natural causes.

Timber Removals

Timber removals from growing stock.--The volume of sound wood in growing-stock trees removed annually for forest products (including roundwood products and logging residues) and for other removals (see glossary for volume of growing stock, p. 4). Roundwood products are logs, bolts, or other round sections cut and used from trees. Logging residues are the unused portions of cut trees plus unused trees killed by logging. Other removals are growing-stock trees removed but not utilized for products or trees left standing but "removed" from the commercial forest land classification by land use change--examples are removals from cultural operations such as timber stand improvement work, land clearing, and changes in land use.

Timber removals from sawtimber.--The net board-foot volume of live sawtimber trees removed for forest products annually (including roundwood products and logging residues) and for other removals (see glossary for volume of sawtimber, p. 4).

Timber products output.--All timber products cut from roundwood, and byproducts of wood manufacturing plants. Roundwood products include logs, bolts, or other round sections cut from growing-stock trees,

cull trees, salvable dead trees, trees on nonforest land, noncommercial species, sapling-size trees, and limbwood. Byproducts from primary manufacturing plants include slabs, edgings, trimmings, miscuts, sawdust, shavings, veneer cores and clippings, and screenings of pulpmills that are used as pulp chips or other products.

Plant byproducts.--Wood products, such as pulpwood chips, obtained incidental to production of other manufactured products.

Plant residues.--Wood materials from manufacturing plants not utilized for some product.

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VENEER-LOG PRODUCTION AND RECEIPTS, NORTH CENTRAL REGION 1972

James E. Blyth

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Shows 1972 veneer-log production and receipts by species in the Lake States (Michigan, Minnesota, and Wisconsin) and in the Central States (Illinois, Indiana, Iowa, and Missouri). Comparisons are made with similar data for 1970. Includes tables showing veneer-log production and receipts (for selected years) since 1946 in the Lake States and since 1956 in the Central States.

OXFORD: 832.20:792(77). KEY WORDS: imports, exports, plant residue, veneer mills.

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VENEER-LOG PRODUCTION AND RECEIPTS, NORTH CENTRAL REGION, 1972

James E. Blyth

This report of 1972 veneer-log production and receipts[1] in the North Central Region is divided into two sections--Lake States (Minnesota, Wisconsin, and Michigan) and Central States (Indiana, Illinois, Iowa, and Missouri)--because different species are grown and used as veneer logs in each area. Moreover, less information can be released about the Central States because more detailed data would reveal the operations of individual mills. Export data are reported for Canada but not for other countries.

All but one veneer mill using North Central Region timber in 1972 reported their veneer-log receipts by species and State of origin. Their cooperation is gratefully acknowledged. Receipts were estimated for the nonresponding mill. Two large mills are not included in this report to avoid disclosure of their operations (fig. 1); neither had been included in previous reports.

Of the 57 active veneer mills in the Region in 1972, 38 were standard[2] veneer mills and 19 were container[3] veneer mills. From 1970 to 1972, six standard veneer mills and three container veneer mills closed; one standard veneer mill began operations. Another standard veneer mill closed during 1972.

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[1] *Production is the volume of veneer logs cut from a specific area; receipts are the volume of veneer logs received by mills in a specific area regardless of geographic source.*

[2] *Commercial, face, and specialty veneer mills that manufacture veneer used in doorskins, furniture, wall panels, specialty plywood, and similar items.*

[3] *Mills that manufacture veneers used in boxes, crates, packing cases, and other wood veneer containers.*

LAKE STATES

Since 1948, Lake States veneer-log production has been declining, although it revived slightly in 1972 (fig 2). Many mills have closed and veneer-log production is now less than two-fifths of the 1948 total. The container veneer industry has been hit hard by substitution of materials such as plastics and paperboard. Container veneer-log production in 1972 was less than one-tenth the volume in 1948. Standard veneer-log production fell sharply from 1948 to 1950, but has been stable since then. The standard veneer industry is plagued by foreign competition and simulated natural wood finishes on plastic, vinyl, hardboard, and nonfigured plywood panels.

Production

Veneer-log production in the Lake States in 1972 was 42.2 million board feet, 7.8 million board feet higher than in 1970. Much of the volume (38.0 million board feet) was in standard veneer logs; the remainder was in container veneer logs.

For the first time, red oak surpassed hard maple as the principal species cut (fig. 3). Spanish-Mediterranean furniture was in great demand for home furnishings, and oak is the preferred species. Other major species harvested were yellow birch and elm. These four species constituted 69 percent of the total harvest in the Lake States.

Hard maple may become the dominant species again. During 1972, the Japanese bowling industry expanded rapidly and large quantities of high-quality hard maple were exported to Japan for bowling alley bedstock. Lower quality maple is being shipped to Japan for bowling pins. As the Japanese bowling alley boom subsides, more normal market conditions may allow domestic hard maple veneer markets to expand more rapidly.

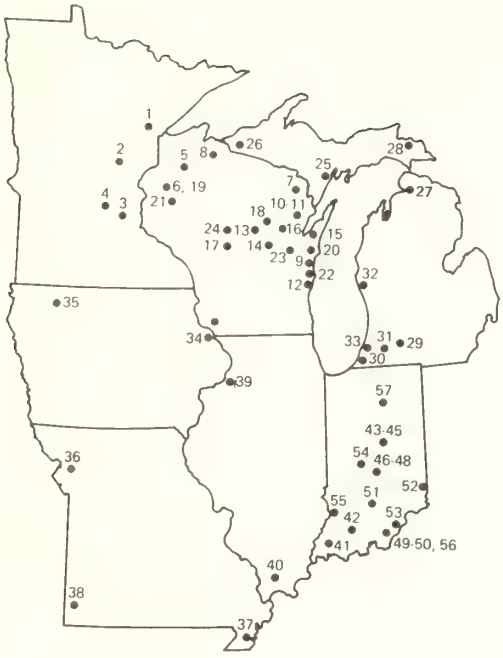

Figure 1.--*Location of active veneer mills in the North Central Region, 1972.*

Type of mill	Number	Name of mill	Location
		MINNESOTA	
Standard	1	Diamond National Co.[1]	Cloquet
	2	Wahkon Veneer Mills	Wahkon
Container	3	Allen Wood Products, Inc.	Hopkins
	4	Elk River Box Co.	Elk River
		WISCONSIN	
Standard	5	Birchwood Lumber & Veneer Co.	Birchwood
	6	Birchwood Mfg. Co.	Rice Lake
	7	Goodman Veneer Mill, UOP	Goodman
	8	Mellen Veneer Mill, UOP	Mellen
	9	Eggers Plywood Co.	Two Rivers
	10	Gillett Veneer & Plywood Co.	Gillett
	11	Linwood, Inc.	Gillett
	12	Larson Plywood Co., Inc.	Sheboygan
	13	Hatley Veneer Co., Inc.	Hatley
	14	Marion Plywood Corp.	Marion
	15	Champion International	Algoma
	16	Weber Veneer & Plywood Co.	Shawano
	17	Weyerhaeuser Co.	Marshfield
	18	Wisconsin Timber & Land Co.	Mattoon
Container	19	Brunette Box & Veneer	Rice Lake
	20	Dufeck Mfg. Co.	Denmark
	21	Ebner Box Factory	Cameron
	22	Konz Container Co.	Howard Grove
	23	Seymour Woodenware Co.	Seymour
	24	Standard Container Co.	Edgar
		MICHIGAN	
Standard	25	Anthony & Co.	Escanaba
	26	Iron Wood Products[1]	Bessemer
	27	Manthei Bros.	Petoskey
	28	Soo Hardwoods, Inc.	Sault Ste. Marie
Container	29	A. C. Hensel Mfg. Co.	Augusta
	30	Nelson R. Anderson Co.	Stevensville
	31	Fruit Growers Package Co.	Paw Paw
	32	Michigan Crate & Basket	Shelby
	33	Riverside Package Co.	Riverside
		IOWA	
Standard	34	R. S. Bacon Veneer Co.	Dubuque
	35	Iowa Veneers, Inc.	Spencer
		MISSOURI	
Standard	36	Missouri Valley Walnut Co.	St. Joseph
Container	37	Betz Tipton Veneer Co.	Caruthersville
	38	Crumbliss Wood Products	Neosho
		ILLINOIS	
Standard	39	Swords Veneer & Lumber Co.	Rock Island
Container	40	The Martin Bros. Container & Timber Products, Inc.	Karnak
		INDIANA	
Standard	41	Evansville Veneer Co.	Evansville
	42	Jasper Veneer Mills	Jasper
	43	Central Veneer, Inc.	Indianapolis
	44	Curry Miller Veneers, Inc.	Indianapolis
	45	Indiana Veneers, Inc.	Indianapolis
	46	David R. Webb Co.	Edinburg
	47	Amos Thompson Corp	Edinburg
	48	Hill Bros. Veneer Co., Inc.	Edinburg
	49	B. L. Curry & Sons	New Albany
	50	Chester B. Stem, Inc.	New Albany
	51	National Veneer & Lumber Co.	Seymour
	52	Pierson-Holowell Co., Inc.	Lawrenceburg
	53	Roberts & Strack Veneer Co.	Clarksville
	54	Theising Veneer Co., Inc.	Mooresville
Container	55	Farrell Box Co., Inc.	Decker
	56	New Albany Box & Basket Co., Inc.	New Albany
	57	W. C. Redmon Sons, Inc.	Peru

[1]Receipts not recorded to avoid disclosure of operations of these mills.

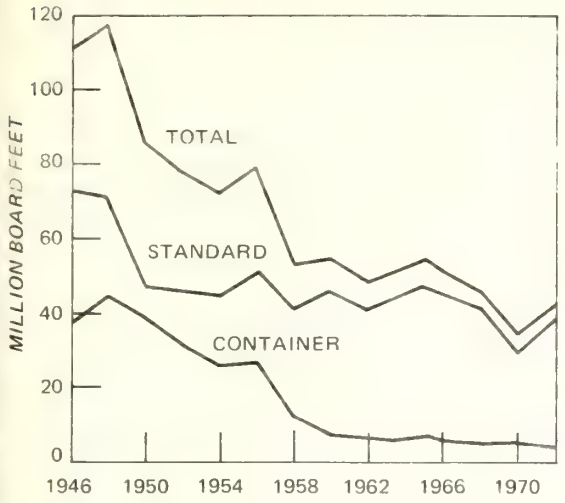

Figure 2.--*Veneer-log production by year and type of industry, Lake States, 1946-1972.*

The major changes in the veneer-log harvest between 1972 and 1970 were as follows:

Species	*Increase, 1970-1972 (Thousand board feet)*	*(Percent)*
Red oak	2,873	42
Elm	1,323	35
Aspen	1,286	101
Walnut	817	146
Beech	772	263
Yellow birch	721	16

Many mills (76), primarily in the Midwest, used Lake States veneer logs in 1972. Of these, 28 used hard maple logs, 22 used red oak, 22 used elm, and 12 used yellow birch.

Wisconsin harvested 19.5 million board feet of logs in 1972 compared with only 15.8 million board feet in 1970. All but 7 percent was consumed in Wisconsin. Leading species harvested were red oak (7.1 million board feet), elm (3.4 million), and aspen (2.1 million). Walnut and butternut were the principal species shipped to other States.

Michigan produced 18.5 million board feet of logs: 10.8 million board feet went to Wisconsin, and 4.6 million board feet was retained in Michigan. Hard maple (39 percent) and yellow birch (23 percent) were the prime species cut for veneer logs.

Eighty-two percent of the Minnesota harvest of 4.2 million board feet was consumed in Wisconsin. The important species cut in terms of volume were red oak, elm, basswood, and cottonwood.

The Lake States exported 4.5 million board feet of veneer logs in 1972 (52 percent more than in 1970), primarily to Indiana (51 percent), Ohio (15 percent), and Canada (14 percent). Michigan supplied two-thirds of the export volume; hard maple and walnut were the main species exported.

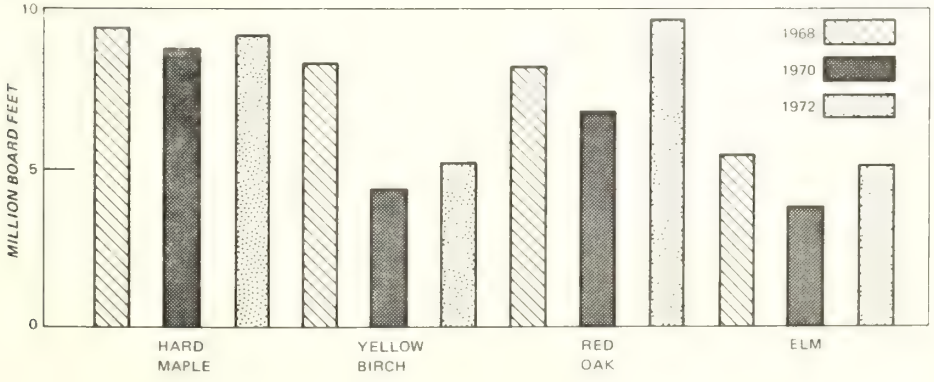

Figure 3.--*Veneer-log production in the Lake States by major species, 1968, 1970, and 1972.*

Mill Receipts

Lake States mills procured 42.3 million board feet of veneer logs in 1972, a gain of 5.3 million board feet from 1970. Imports from other States and Canada dropped 1 million board feet between 1970 and 1972. Hard maple, red oak, and yellow birch were in greater demand than in 1970 because furniture, door, cabinet, and paneling markets were excellent in 1972. Elm was also heavily used, partly because Dutch elm disease is spreading in the Lake States and high-quality trees are being salvaged for veneer.

Veneer mills are especially abundant in northeastern Wisconsin where several large mills produce high-quality face and specialty veneers. Wisconsin mills received 36.5 million board feet of veneer logs, surpassing 1970 by 6.6 million board feet. Nearly all (99 percent) of the red oak veneer log volume received in the Lake States was consumed in Wisconsin. Fifty percent of the log requirements in Wisconsin came from outside the State: Michigan (30 percent), Minnesota (9 percent), Canada (7 percent), and Iowa (4 percent). Michigan was a prime source of hard maple and yellow birch logs.

Michigan veneer plants received 5.3 million board feet of veneer logs, down 1.4 million board feet from 1970. Hard maple, yellow birch, and paper birch are the significant species used. Michigan forests supplied 86 percent of the veneer-log requirements in the State.

Minnesota's mills acquired half a million board feet of veneer logs, a slight increase from 1970.

Plant Residue[4]

Less than 3 percent of the wood residue generated at veneer mills in the Lake States was disposed of as waste in 1972. Important uses for coarse residue were in fiber products (62 percent) and as industrial fuel (21 percent). These were the major uses for fine residues, also. Nearly half (48 percent) of the total wood residue is used for fiber products.

Eighty percent of the bark was burned as industrial fuel. Consequently, disposal of plant residue does not appear to be a problem for the veneer industry, except for mills seeking higher value uses for their residue.

CENTRAL STATES

Since 1956, output of veneer logs in the Central States has ranged from 39.9 million board feet in 1960 to 23.5 million board feet in 1970 (fig. 4). The overall trend has been moderately downward. Harvesting of cottonwood veneer logs dropped sharply during this period because container veneer markets, a major market for cottonwood, contracted.

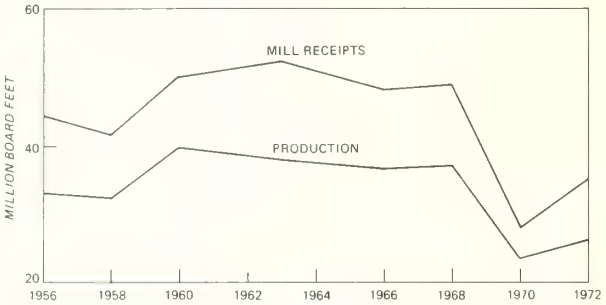

Figure 4.--*Veneer-log production and mill receipts in the Central States, 1956-1972.*

From 1956 to 1972 veneer-log receipts in the Central States peaked at 52.2 million board feet (in 1963) and reached a low of 28.0 million board feet (in 1970). During these years, the Central States veneer industry has imported many of its logs from other areas.

Production

Excellent fine hardwood veneer markets in such industries as furniture, kitchen cabinets, and other home furnishings sparked a rise in standard veneer-log production from 16.9 million board feet in 1970 to 21.8 million board feet in 1972. Meanwhile, the container veneer-log harvest plunged from 6.6 million board feet in 1970 to 4.4 million board feet in 1972.

Ten million board feet of walnut veneer logs were cut in 1972. Other important species harvested were cottonwood, white oak, and pecan. The major changes in the veneer-log harvest were as follows:

---

[4]*Plant residue at veneer mills is classed as: (1) bark; (2) coarse (wood)--suitable for chipping, such as veneer cores; or (3) fine (wood)--not suitable for chipping, such as veneer clippings.*

Species	Harvest change, 1970-1972 (Thousand board feet)	(Percent)
Walnut	+1,865	+23
White oak	+1,651	+99
Cottonwood	-1,272	-27
Pecan	+ 882	+58

Indiana forests furnished about half (13.5 million board feet) of the veneer-log volume harvested in the Central States in 1972 and 2.3 million board feet more than in 1970. Harvesting of veneer logs increased over 1970 in every State except Iowa. Exports were 5.3 million board feet from the Central States in 1972, mainly to Kentucky (42 percent), Wisconsin (29 percent), and Ohio (26 percent).

Receipts

Central States mills received 35.1 million board feet of veneer logs in 1972, an increase of 7.1 million board feet compared to 1970. These mills imported 14.2 million board feet of logs from other widespread areas including more than 1 million board feet each from Kentucky, Ohio, Oklahoma, Michigan, Tennessee, Mississippi, Wisconsin, and Pennsylvania. Kentucky was an important supplier of walnut, Oklahoma and Mississippi of pecan, and Pennsylvania of black cherry.

Species in greatest demand by Central States veneer mills in 1972 were walnut, pecan, cottonwood, and white oak. White oak receipts were slightly more than double those in 1970, while pecan receipts rose 90 percent. Both are important furniture veneer species.

Central and southern Indiana has a large concentration of veneer mills; consequently, Indiana received 76 percent of the log receipts in the Central States, including 8.8 million board feet of walnut and more than 99 percent of the white oak.

Plant Residue

Only 13 percent of the wood residue and 12 percent of the bark was disposed of as waste. Industrial fuel was the main use for both wood and bark residue. About one-eighth of the wood residue was consumed at pulp mills. As in the Lake States, disposal of plant residue does not seem to be a significant problem for the veneer industry, unless higher value uses are needed.

Table 1.--*Production and imports of veneer logs, Lake States, 1972*
(In thousand board feet, International
1/4-inch log rule)

SPECIES AND DESTINATION	PRODUCTION BY STATES 1/				IMPORTS			TOTAL RECEIPTS 2/
	MICHIGAN	MINNESOTA	WISCONSIN	REGIONAL TOTAL	OTHER U.S.	CANADA	TOTAL IMPORTS	
PINE								
WISCONSIN	3	0	45	48	0	0	0	48
TOTAL	3	0	45	48	0	0	0	48
ASH								
MICHIGAN	128	0	0	128	0	0	0	128
MINNESOTA	0	10	0	10	0	0	0	10
WISCONSIN	107	50	302	459	32	0	32	491
EXPORTED 3/	6	0	0	6	0	0	0	0
TOTAL	241	60	302	603	32	0	32	629
ASPEN								
MICHIGAN	214	0	0	214	0	0	0	214
MINNESOTA	0	26	0	26	0	0	0	26
WISCONSIN	38	15	2110	2163	0	0	0	2163
EXPORTED 3/	0	155	0	155	0	0	0	0
TOTAL	252	196	2110	2558	0	0	0	2403
BASSWOOD								
MICHIGAN	306	0	0	306	0	0	0	306
MINNESOTA	0	133	0	133	0	0	0	133
WISCONSIN	318	470	1621	2409	252	0	252	2661
EXPORTED 3/	25	0	0	25	0	0	0	0
TOTAL	649	603	1621	2873	252	0	252	3100
BEECH								
MICHIGAN	178	0	0	178	0	0	0	178
WISCONSIN	493	0	47	540	0	30	30	570
EXPORTED 3/	347	0	0	347	0	0	0	0
TOTAL	1018	0	47	1065	0	30	30	748
BLACK CHERRY								
MICHIGAN	22	0	0	22	0	0	0	22
WISCONSIN	31	22	50	103	3	0	3	106
EXPORTED 3/	26	0	0	26	0	0	0	0
TOTAL	79	22	50	151	3	0	3	128
BUTTERNUT								
WISCONSIN	0	0	2	2	0	0	0	2
EXPORTED 3/	0	19	325	344	0	0	0	0
TOTAL	0	19	327	346	0	0	0	2
COTTONWOOD								
MICHIGAN	570	0	0	570	0	0	0	570
MINNESOTA	0	82	0	82	0	0	0	82
WISCONSIN	0	510	106	616	8	0	8	624
TOTAL	570	592	106	1268	8	0	8	1276
ELM								
MICHIGAN	144	0	11	155	0	0	0	155
MINNESOTA	0	5	0	5	0	0	0	5
WISCONSIN	794	625	3440	4859	236	0	236	5095
EXPORTED 3/	1	0	78	79	0	0	0	0
TOTAL	939	630	3529	5098	236	0	236	5255
HARD MAPLE								
MICHIGAN	1183	0	0	1183	0	44	44	1227
MINNESOTA	0	15	26	41	0	0	0	41
WISCONSIN	4681	80	1881	6642	161	1350	1511	8153
EXPORTED 3/	1257	0	132	1389	0	0	0	0
TOTAL	7121	95	2039	9255	161	1394	1555	9421

TABLE 1 CONTINUED ON NEXT PAGE

TABLE 1 CONTINUED

PAPER BIRCH								
MICHIGAN	798	22	44	864	0	154	154	1018
WISCONSIN	25	200	123	348	0	91	91	439
EXPORTED 3/	0	11	0	11	0	0	0	0
TOTAL	823	233	167	1223	0	245	245	1457
PECAN								
MICHIGAN	4	0	0	4	0	0	0	4
EXPORTED 3/	82	0	0	82	0	0	0	0
TOTAL	86	0	0	86	0	0	0	4
RED OAK								
MICHIGAN	109	0	0	109	0	0	0	109
MINNESOTA	0	26	0	26	0	0	0	26
WISCONSIN	816	1215	7094	9125	759	70	829	9954
EXPORTED 3/	402	24	17	443	0	0	0	0
TOTAL	1327	1265	7111	9703	759	70	829	10089
SOFT MAPLE								
MICHIGAN	205	0	0	205	0	0	0	205
MINNESOTA	0	118	10	128	26	0	26	154
WISCONSIN	106	169	414	689	96	41	137	826
EXPORTED 3/	18	0	0	18	0	0	0	0
TOTAL	329	287	424	1040	122	41	163	1185
WALNUT								
EXPORTED 3/	624	113	639	1376	0	0	0	0
TOTAL	624	113	639	1376	0	0	0	0
WHITE OAK								
WISCONSIN	2	23	172	197	5	0	5	202
EXPORTED 3/	90	0	0	90	0	0	0	0
TOTAL	92	23	172	287	5	0	5	202
YELLOW BIRCH								
MICHIGAN	704	11	11	726	0	462	462	1188
MINNESOTA	0	5	0	5	0	0	0	5
WISCONSIN	3479	78	764	4321	0	835	835	5156
EXPORTED 3/	135	0	0	135	0	0	0	0
TOTAL	4318	94	775	5187	0	1297	1297	6349
YELLOW-POPLAR								
WISCONSIN	0	0	1	1	0	0	0	1
EXPORTED 3/	4	0	0	4	0	0	0	0
TOTAL	4	0	1	5	0	0	0	1
OTHER HARDWOODS								
EXPORTED 3/	4	0	0	4	0	0	0	0
TOTAL	4	0	0	4	0	0	0	0
ALL SPECIES								
MICHIGAN	4565	33	66	4664	0	660	660	5324
MINNESOTA	0	420	36	456	26	0	26	482
WISCONSIN	10893	3457	18172	32522	1552	2417	3969	36491
EXPORTED 3/	3021	322	1191	4534	0	0	0	0
TOTAL	18479	4232	19465	42176	1578	3077	4655	42297

1/ VERTICAL COLUMNS OF FIGURES UNDER BOX HEADING "PRODUCTION BY STATES" PRESENT THE AMOUNT OF VENEER LOGS CUT IN EACH STATE.

2/ PRODUCTION MINUS EXPORTS PLUS IMPORTS.

3/ VENEER LOGS SHIPPED TO STATES OUTSIDE THE LAKE STATES AND TO CANADA.

Table 2.--*Mills using four species of Lake States veneer logs, by location, 1972*
(In numbers)

Location	Red oak	Hard maple	Yellow birch	Elm
Lake States	16	16	10	20
Indiana	4	7	1	2
Illinois	--	1	--	--
Ohio	1	3	--	--
Kentucky	1	1	--	--
Canada	--	--	1	--
Total	22	28	12	22

Table 3.--*Veneer-log production and receipts in the Lake States by species, 1970 and 1972*

Species	Production			Receipts		
	1970	1972	Change	1970	1972	Change
	Thousand board feet 1/		Percent	Thousand board feet 1/		Percent
Ash	350	603	+ 72	354	629	+ 78
Aspen	1,272	2,558	+101	1,272	2,403	+ 89
Basswood	3,268	2,873	- 12	3,570	3,100	- 13
Beech	293	1,065	+263	293	748	+155
Black cherry	101	151	+ 50	68	128	+ 88
Butternut	329	346	+ 5	8	2	- 75
Cottonwood	1,301	1,268	- 3	1,398	1,276	- 9
Elm	3,775	5,098	+ 35	3,820	5,255	+ 38
Hard maple	8,782	9,255	+ 5	9,007	9,421	+ 5
Paper birch	1,161	1,223	+ 5	1,927	1,457	- 24
Pecan	21	86	+310	154	4	- 97
Red oak	6,830	9,730	+ 42	7,650	10,089	+ 32
Soft maple	827	1,040	+ 26	911	1,185	+ 30
Walnut	559	1,376	+146	--	--	--
White oak	290	287	- 1	197	202	+ 3
Yellow birch	4,466	5,187	+ 16	6,130	6,349	+ 4
Other species	726	57	- 92	256	49	- 81
Total	34,351	42,176	+ 23	37,015	42,297	+ 14

1/ International 1/4-inch log rule.

Table 4.--*Veneer-log production by species group for selected years, Lake States, 1946-1972*
(In million board feet)[1]

Year	Ash	Aspen	Bass-wood	Beech	Yellow birch	Cotton-wood	Elm	Hard maple	Soft maple	Red oak	White oak	Paper birch	Walnut	Other species	All species
1946	2.3	4.0	10.4	5.6	[2]/26.8	0.4	16.6	[3]/40.3	--	[4]/3.1	--	--	--	[5]/1.1	110.6
1952	--	1.4	10.4	3.1	[2]/18.2	--	11.5	[3]/23.8	--	[4]/5.1	--	--	--	[5]/4.7	78.2
1954	.8	.3	9.2	3.2	[2]/17.3	2.7	10.5	[3]/20.9	--	[4]/5.5	--	--	--	1.6	72.0
1956	.7	.8	10.3	5.7	[2]/20.3	2.1	9.6	20.1	3.7	[4]/4.5	--	--	.3	.9	79.0
1958	.6	1.7	7.1	1.8	[2]/13.1	2.2	8.9	9.7	2.2	[4]/4.8	--	--	.2	.4	52.7
1960	1.0	2.1	6.2	1.0	[2]/14.1	1.9	5.1	10.9	2.9	[4]/7.6	--	--	.6	.6	54.0
1963	.6	1.5	6.6	.3	[2]/10.9	.4	5.7	10.5	2.2	[4]/8.9	--	--	2.3	.6	50.5
1965	.7	.6	6.0	.5	[2]/11.3	1.4	6.3	11.8	1.8	[4]/9.0	--	--	.9	1.4	51.7
1966	1.1	.7	4.5	.5	[2]/9.5	1.4	5.7	13.1	1.5	9.1	.3	--	1.5	2.0	50.9
1968	1.0	.6	3.6	.5	8.3	1.4	5.4	9.4	1.2	8.2	.5	1.9	1.7	1.8	45.5
1970	.4	1.3	3.2	.3	4.4	1.3	3.8	8.8	.8	6.8	.3	1.2	.6	1.2	34.4
1972	.6	2.6	2.9	1.1	5.2	1.3	5.1	9.2	1.0	9.7	.3	1.2	1.4	.6	42.2

1/ International 1/4-inch log rule.
2/ Includes paper birch.
3/ Includes soft maple.
4/ Includes white oak.
5/ Includes ash and cottonwood.

Table 5.--*Veneer-log production for selected years and type of industry, Lake States, 1946-1972*
(In million board feet)[1]

Year	Standard	Container	Total
1946	72.7	37.9	110.6
1948	71.7	45.1	116.8
1950	47.3	39.3	86.6
1952	46.8	31.4	78.2
1954	45.3	26.7	72.0
1956	51.6	27.4	79.0
1958	40.3	12.4	52.7
1960	46.5	7.5	54.0
1962	41.0	6.6	47.6
1963	43.9	6.6	50.5
1965	44.6	7.1	51.7
1966	45.0	5.9	50.9
1968	40.6	4.9	45.5
1970	29.4	5.0	34.4
1972	38.0	4.2	42.2

1/ International 1/4-inch log rule.

Table 6.--*Lake States veneer-log production, receipts, exports, and imports for selected years, 1946-1972*
(In million board feet)[1]

Year	Produced in the Lake States and received at Lake States Mills	Exported[2]	Imported[3]	Total production in Lake States	Total receipts in Lake States
1946	109.7	0.9	5.9	110.6	115.6
1948	116.0	.8	12.0	116.8	128.0
1950	86.0	.6	15.7	86.6	101.7
1952	77.8	.4	12.1	78.2	89.9
1954	71.6	.4	12.1	72.0	83.7
1956	78.7	.3	13.4	79.0	92.1
1958	51.5	1.2	6.0	52.7	57.5
1960	51.9	2.1	12.5	54.0	64.4
1963	45.0	5.5	7.7	50.5	52.7
1965	49.0	2.7	7.6	51.7	56.6
1966	45.8	5.1	9.6	50.9	55.4
1968	39.7	5.8	7.9	45.5	47.6
1970	31.4	3.0	5.6	34.4	37.0
1972	37.7	4.5	4.6	42.2	42.3

1/ International 1/4-inch log rule.
2/ From Lakes States to other States and Canada.
3/ From other States and Canada into Lakes States.

Table 7.--*Veneer-log receipts in the Lake States by species groups for selected years, 1952-1972*
(In million board feet)[1]

Year	Ash	Aspen	Bass-wood	Beech	Yellow birch	Cotton-wood	Elm	Hard maple	Soft maple	Red oak	White oak	Paper birch	Other species	All species
1952	--	1.4	10.9	3.2	2/ 27.1	--	11.7	3/ 24.9	--	4/ 5.3	--	--	5/ 5.4	89.9
1954	.8	.3	10.3	3.2	2/ 25.0	2.7	10.9	3/ 22.4	--	4/ 6.5	--	--	1.6	83.7
1956	.7	.8	10.6	5.7	2/ 28.5	3.0	10.2	21.9	4.7	4/ 5.0	--	--	1.0	92.1
1958	.6	1.7	7.3	1.8	2/ 17.2	2.2	9.2	9.6	2.5	4/ 5.0	--	--	.4	57.5
1960	1.1	2.1	6.8	.9	2/ 18.9	3.3	6.2	12.2	3.6	4/ 8.4	--	--	.9	64.4
1963	.7	1.6	6.7	.3	2/ 14.3	.7	4.9	11.1	2.6	4/ 9.3	--	--	.5	52.7
1965	.7	.6	6.3	.5	2/ 14.5	2.1	6.3	13.2	1.9	4/ 9.3	--	--	1.2	56.6
1966	1.1	.7	4.8	.5	2/ 14.7	2.3	5.8	12.8	1.8	9.7	.2	--	1.0	55.4
1968	1.0	.6	3.9	.5	10.2	2.1	5.2	9.0	1.3	8.3	.2	4.0	1.3	47.6
1970	.3	1.3	3.6	.3	6.1	1.4	3.8	9.0	.9	7.7	.2	1.9	.5	37.0
1972	.6	2.4	3.1	.7	6.3	1.3	5.3	9.4	1.2	10.1	.2	1.5	.2	42.3

1/ International 1/4-inch log rule.
2/ Includes paper birch.
3/ Includes soft maple.
4/ Includes white oak.
5/ Includes ash and cottonwood.

Table 8.--*Production and disposition of hardwood veneer plant residue by type of residue and use, Lake States, 1972*

(In thousand cubic feet)

State and type of use	Wood residue			Bark
	Total	Coarse 1/	Fine 2/	
Michigan				
Fiber products	30.0	30.0	--	--
Industrial fuel	290.1	76.4	213.7	135.2
Domestic fuel	16.8	16.8	--	--
Miscellaneous 3/	25.9	25.9	--	--
Not used 4/	26.0	--	26.0	30.0
Total	388.8	149.1	239.7	165.2
Minnesota				
Industrial fuel	4.3	3.8	.5	2.5
Domestic fuel	8.8	8.8	--	9.0
Miscellaneous 3/	5.4	--	5.4	--
Not used 4/	16.7	.9	15.8	3.5
Total	35.2	13.5	21.7	15.0
Wisconsin				
Fiber products	1,451.7	702.1	749.6	--
Industrial fuel	1,001.6	171.2	830.4	905.4
Domestic fuel	8.5	8.5	--	--
Miscellaneous 3/	152.9	133.9	19.0	--
Not used 4/	45.8	4.7	41.1	224.2
Total	2,660.5	1,020.4	1,640.1	1,129.6
All States				
Fiber products	1,481.7	732.1	749.6	--
Industrial fuel	1,296.0	251.4	1,044.6	1,043.1
Domestic fuel	34.1	34.1	--	9.0
Miscellaneous 3/	184.2	159.8	24.4	--
Not used 4/	88.5	5.6	82.9	257.7
Total	3,084.5	1,183.0	1,901.5	1,309.8

1/ Suitable for chipping such as veneer cores.

2/ Not suitable for chipping such as veneer clippings.

3/ Livestock bedding, mulch, small dimension and specialty items.

4/ Including residues burned as waste.

Table 9.--*Production and imports of veneer logs, Central States, 1972*
(In thousand board feet, International
1/4-inch log rule)

SPECIES AND DESTINATION	PRODUCTION BY STATES 1/					IMPORTS			TOTAL RECEIPTS 2/
	ILLINOIS	INDIANA	IOWA	MISSOURI	REGIONAL TOTAL	LAKE STATES	OTHER U.S.	TOTAL IMPORTS	
ASH									
INDIANA	3	266	0	0	269	1	193	194	463
ILL.,IOWA,MO.	0	0	79	0	79	0	0	0	79
EXPORTED 3/	0	12	32	0	44	0	0	0	0
TOTAL	3	278	111	0	392	1	193	194	542
BASSWOOD									
INDIANA	0	11	0	0	11	23	2	25	36
EXPORTED 3/	0	0	252	0	252	0	0	0	0
TOTAL	0	11	252	0	263	23	2	25	36
BLACK CHERRY									
INDIANA	2	81	0	0	83	21	550	571	654
ILL.,IOWA,MO.	0	0	0	0	0	0	201	201	201
EXPORTED 3/	0	0	3	0	3	0	0	0	0
TOTAL	2	81	3	0	86	21	751	772	855
BUTTERNUT									
INDIANA	0	2	17	0	19	312	7	319	338
ILL.,IOWA,MO.	0	0	24	0	24	19	0	19	43
TOTAL	0	2	41	0	43	331	7	338	381
COTTONWOOD									
INDIANA	0	1122	0	0	1122	0	33	33	1155
ILL.,IOWA,MO.	1804	0	0	468	2272	0	1428	1428	3700
EXPORTED 3/	0	0	84	0	84	0	0	0	0
TOTAL	1804	1122	84	468	3478	0	1461	1461	4855
ELM									
INDIANA	1	54	0	0	55	79	4	83	138
ILL.,IOWA,MO.	0	0	204	0	204	0	0	0	204
EXPORTED 3/	0	0	236	0	236	0	0	0	0
TOTAL	1	54	440	0	495	79	4	83	342
GUM									
INDIANA	33	446	0	0	479	0	55	55	534
ILL.,IOWA,MO.	11	0	0	0	11	0	61	61	72
TOTAL	44	446	0	0	490	0	116	116	606
HARD MAPLE									
INDIANA	7	567	33	0	607	910	870	1780	2387
ILL.,IOWA,MO.	0	0	22	0	22	12	4	16	38
EXPORTED 3/	0	346	161	0	507	0	0	0	0
TOTAL	7	913	216	0	1136	922	874	1796	2425
PECAN									
INDIANA	518	354	0	61	933	30	3466	3496	4429
ILL.,IOWA,MO.	0	0	569	593	1162	0	99	99	1261
EXPORTED 3/	24	279	0	0	303	0	0	0	0
TOTAL	542	633	569	654	2398	30	3565	3595	5690

TABLE 9 CONTINUED ON NEXT PAGE

TABLE 9 CONTINUED

RED OAK									
INDIANA	79	510	0	0	589	283	449	732	1321
ILL.•IOWA•MO.	11	0	176	0	187	0	61	61	248
EXPORTED 3/	15	192	744	0	951	0	0	0	0
TOTAL	105	702	920	0	1727	283	510	793	1569
SOFT MAPLE									
INDIANA	0	285	0	0	285	0	11	11	296
ILL.•IOWA•MO.	32	0	0	6	38	0	181	181	219
EXPORTED 3/	0	0	122	0	122	0	0	0	0
TOTAL	32	285	122	6	445	0	192	192	515
SYCAMORE									
INDIANA	0	616	0	0	616	0	55	55	671
ILL.•IOWA•MO.	11	0	0	55	66	0	117	117	183
TOTAL	11	616	0	55	682	0	172	172	854
WALNUT									
INDIANA	1651	3538	492	829	6510	551	1748	2299	8809
ILL.•IOWA•MO.	459	0	526	282	1267	438	470	908	2175
EXPORTED 3/	310	1027	220	670	2227	0	0	0	0
TOTAL	2420	4565	1238	1781	10004	989	2218	3207	10984
WHITE OAK									
INDIANA	420	2179	0	98	2697	61	1264	1325	4022
ILL.•IOWA•MO.	4	0	8	0	12	0	0	0	12
EXPORTED 3/	132	408	11	54	605	0	0	0	0
TOTAL	556	2587	19	152	3314	61	1264	1325	4034
YELLOW BIRCH									
INDIANA	0	0	0	0	0	13	0	13	13
TOTAL	0	0	0	0	0	13	0	13	13
YELLOW-POPLAR									
INDIANA	7	1129	0	0	1136	2	93	95	1231
EXPORTED 3/	0	14	0	0	14	0	0	0	0
TOTAL	7	1143	0	0	1150	2	93	95	1231
OTHER HARDWOODS									
INDIANA	24	85	0	0	109	4	11	15	124
TOTAL	24	85	0	0	109	4	11	15	124
ALL SPECIES									
INDIANA	2745	11245	542	988	15520	2290	8811	11101	26621
ILL.•IOWA•MO.	2332	0	1608	1404	5344	469	2622	3091	8435
EXPORTED 3/	481	2278	1865	724	5348	0	0	0	0
TOTAL	5558	13523	4015	3116	26212	2759	11433	14192	35056

1/ VERTICAL COLUMNS OF FIGURES UNDER BOX HEADING "PRODUCTION BY STATES" PRESENT THE AMOUNT OF VENEER LOGS CUT IN EACH STATE.

2/ PRODUCTION MINUS EXPORTS PLUS IMPORTS.

3/ VENEER LOGS SHIPPED TO STATES OUTSIDE THE LAKE STATES AND TO CANADA.

Table 10.--*Veneer-log production and receipts in the Central States by species, 1970 and 1972*

Species	Production			Receipts		
	1970	1972	Change	1970	1972	Change
	Thousand bd. ft.[1/]		Percent	Thousand bd. ft.[1/]		Percent
Ash	296	392	+32	434	542	+ 25
Basswood	322	263	-18	25	36	+ 44
Black cherry	78	86	+10	190	855	+350
Butternut	128	43	-66	452	381	- 16
Cottonwood	4,750	3,478	-27	4,749	4,855	+ 2
Elm	556	495	-11	476	342	- 28
Gum	669	490	-27	831	606	- 27
Hard maple	796	1,136	+43	1,331	2,425	+ 82
Pecan	1,516	2,398	+58	2,994	5,690	+ 90
Red oak	1,279	1,727	+35	841	1,569	+ 87
Soft maple	550	445	-19	612	515	- 16
Sycamore	1,302	682	-48	1,362	854	- 37
Walnut	8,139	10,004	+23	9,978	10,984	+ 10
White oak	1,663	3,314	+99	1,965	4,034	+105
Yellow-poplar	849	1,150	+35	1,055	1,231	+ 17
Other species	641	109	-83	661	137	- 79
Total	23,534	26,212	+11	27,956	35,056	+ 25

1/ International 1/4-inch log rule.

Table 11.--*Veneer-log production by species groups for selected years, Central States, 1956-1972*
(In million board feet)[1]

Year	Cotton-wood	Elm	Hard maple	Hickory	Red oak	Soft maple	Sycamore	Walnut	White oak	Yellow-poplar	Other species	All species
1956	8.0	0.9	0.8	0.1	1.1	1.8	0.6	10.6	3.4	1.6	4.2	33.1
1958	8.9	.6	1.1	.1	1.0	.5	.5	10.8	2.6	1.1	5.2	32.4
1960	11.2	2.0	1.2	.1	1.5	1.2	2.5	13.2	1.6	1.6	3.8	39.9
1963	7.4	.7	1.6	.8	.9	1.0	1.8	15.5	1.4	2.3	4.6	38.0
1966	6.2	2/ .7	1.4	1.1	2.3	.5	1.0	14.	1.9	3.0	3.9	36.7
1968	4.1	.7	1.3	3.0	2.1	.4	1.2	16.1	3.6	1.3	3.2	37.0
1970	4.8	.6	.8	1.5	1.3	.5	1.3	8.1	1.7	.8	2.1	23.5
1972	3.5	.5	1.1	3/ 2.4	1.7	.4	.7	10.0	3.3	1.2	1.4	26.2

1/ International 1/4-inch log rule.
2/ Estimated.
3/ Pecan hickory only.

Table 12.--*Veneer-log receipts by species groups for selected years, Central States, 1956-1972*
(In million board feet)[1]

Year	Cotton-wood	Elm	Hard maple	Hickory	Red oak	Soft maple	Sycamore	Walnut	White oak	Yellow-poplar	Other species	All species
1956	10.9	0.8	1.2	0.6	1.3	0.8	1.3	11.4	6.7	2.8	6.6	44.4
1958	10.2	.6	1.7	.3	1.3	.3	1.2	13.0	4.8	1.9	6.3	41.6
1960	10.4	1.0	2.9	.2	1.4	.5	2.3	17.1	3.6	2.8	8.0	50.2
1963	8.6	1.0	3.1	1.6	.9	.8	2.0	21.2	2.3	2.8	7.9	52.2
1966	6.7	2/ 1.0	3.6	1.6	2.0	.4	1.2	17.9	2.1	4.4	7.3	48.2
1968	5.7	1.0	2.7	4.9	2.3	.5	1.1	18.4	5.2	1.9	5.1	48.8
1970	4.7	.5	1.3	3.0	.8	.6	1.4	10.0	2.0	1.1	2.6	28.0
1972	4.9	.3	2.4	3/ 5.7	1.6	.5	.9	11.0	4.0	1.2	2.6	35.1

1/ International 1/4-inch log rule.
2/ Estimated.
3/ Pecan hickory only.

Table 13.--*Production and disposition of hardwood veneer plant residue by type of residue and use, Central States, 1972*

(In thousand cubic feet)

State and type of use	Wood residue			Bark
	Total	Coarse[1/]	Fine[2/]	
Illinois, Iowa, and Missouri				
Fiber products	96.3	41.5	54.8	--
Charcoal	4.6	4.6	--	--
Industrial fuel	175.5	50.8	124.7	135.0
Domestic fuel	4.2	4.2	--	6.1
Miscellaneous[3/]	99.9	87.8	12.1	--
Not used[4/]	235.5	47.4	188.1	120.4
Total	616.0	236.3	379.7	261.5
Indiana				
Fiber products	220.5	126.9	93.6	--
Industrial fuel	1,314.7	409.0	905.7	621.7
Domestic fuel	167.7	83.5	84.2	58.0
Miscellaneous[3/]	144.4	123.4	21.0	136.8
Not used[4/]	96.1	2.6	93.5	8.7
Total	1,943.4	745.4	1,198.0	825.2
All States				
Fiber products	316.8	168.4	148.4	--
Charcoal	4.6	4.6	--	--
Industrial fuel	1,490.2	459.8	1,030.4	756.7
Domestic fuel	171.9	87.7	84.2	64.1
Miscellaneous[3/]	244.3	211.2	33.1	136.8
Not used[4/]	331.6	50.0	281.6	129.1
Total	2,559.4	981.7	1,577.7	1,086.7

1/ Suitable for chipping such as veneer cores.
2/ Not suitable for chipping such as veneer clippings.
3/ Livestock bedding, mulch, small dimension and specialty items.
4/ Including residues burned as waste.

U.S. GOVERNMENT PRINTING OFFICE: 1974—667-317

Blyth, James E.
1974. Veneer-log production and receipts, North Central Region, 1972. North Cent. For. Exp. Stn., St. Paul, Minn. 16 p., illus. (USDA For. Serv. Resour. Bull. NC-23)

Shows 1972 veneer-log production and receipts by species in the Lake States (Michigan, Minnesota, and Wisconsin) and in the Central States (Illinois, Indiana, Iowa, and Missouri). Comparisons are made with similar data for 1970. Includes tables showing veneer-log production and receipts (for selected years) since 1946 in the Lake States and since 1956 in the Central States.

OXFORD: 832.20:792(77). KEY WORDS: imports, exports, plant residue, veneer mills.

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OTES:

PRIMARY FOREST PRODUCTS INDUSTRY & TIMBER USE, MICHIGAN, 1972

BY:
JAMES E. BLYTH,
ALLEN H. BOELTER, &
CARL W. DAHLESON

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PULPWOOD PRODUCTION-
1.4 MIL. CORDS IN 1972

9 OUT OF 10 - ROUNDWOOD
REST - WOOD RESIDUE FROM
SAWMILLS, VENEER MILLS, &
OTHER PULPWOOD MILLS

454 MIL. BOARD FT. OF SAW
LOGS IN 1972

HARD MAPLE, ASPEN, RED OAK,
SOFT MAPLE - MAJOR
SPECIES

NORTH CENTRAL FOREST EXPERIMENT STATION
FOREST SERVICE
U.S. DEPARTMENT OF AGRICULTURE

North Central Forest Experiment Station
John H. Ohman, Director
Forest Service - U.S. Department of Agriculture
Folwell Avenue
St. Paul, Minnesota 55101
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Blyth, James E., Allan H. Boelter, and Carl W. Danielson.
1975. Primary forest products industry and timber use, Michigan, 1972. North Cent. For. Exp. Stn., St. Paul, Minn. 45 p., illus. (USDA For. Serv. Resour. Bull. NC-24)

Discusses recent Michigan forest industry trends; timber removals for industrial roundwood in 1972; production and receipts in 1972 of pulpwood, saw logs, veneer logs, and other roundwood products. Shows trends in pulpwood and veneer-log production, and compares saw log production in 1969 and 1972. Discusses primary wood-using plant residue and its disposition.

OXFORD: 791:792(774). KEY WORDS: pulpwood, saw logs, veneer logs, production, trends, wood residue, timber removals.

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PRIMARY FOREST PRODUCTS INDUSTRY AND TIMBER USE, MICHIGAN, 1972

James E. Blyth, Allen H. Boelter, and Carl W. Danielson

RECENT TRENDS--FEWER MILLS USE MORE WOOD

Active primary[1] wood-using mills declined from 347 in 1969 to 324 in 1972 but received 145.7 million cubic feet of roundwood in 1972 compared with 132.1 million cubic feet in 1969. Use of softwoods in Michigan was up in 1972 over 1969 after a general decline the previous 15 years. The trend in hardwood use has been up during the last 2 decades.

Wood product markets were generally favorable for producers in 1972. Demand for pallets, railroad ties, furniture, paper, and paperboard products was strong.

Industrial roundwood production has increased about 1.1 percent annually between 1954 and 1972. Hardwoods are becoming a larger proportion of total output. In 1954, about 34 percent of the industrial roundwood cut was softwoods; in 1972, only 24 percent was softwood. Large quantities of hardwood, formerly unusable because of technical processing problems, are now used for pulp.

Medium- to large-size primary mills occur all over Michigan, but the largest concentrations are in the Western Upper Peninsula (UP)[2] and Northern Lower Peninsula (LP) (fig. 1).

Between 1965 and 1972, industrial roundwood production shifted slightly from Upper Michigan and the Southern LP to the Northern LP. Thirty-nine percent of the industrial roundwood came from the Northern LP in 1972 compared with 36 percent in 1965.

The percentage of the industrial roundwood harvest used in Michigan is increasing although log and bolt shipments out-of-State are significantly greater than imports.

TIMBER REMOVALS FOR INDUSTRIAL ROUNDWOOD

Timber removals (from growing stock on commercial forest land) for industrial roundwood were estimated to be 194.3 million cubic feet in 1972, according to the results of a logging utilization study in Michigan in 1965. In 1965, timber removals for industrial roundwood were 167.9 million cubic feet, 14 percent less than in 1972. In upper Michigan, the heaviest timber removals for all species per thousand acres of stocked commercial forest land occurred in Menominee, Baraga, and Dickinson Counties in 1972; in Lower Michigan cutting was heaviest in Ionia, Osceola, Clinton, Oceana, Oscoda, and Roscommon Counties (fig. 2).

The heaviest timber removals for industrial roundwood as a percent of annual allowable cut occurred in Osceola, Oceana, Oscoda, Roscommon, and Lake Counties in 19[illegible] (fig. 3).

Such indicators of harvest intensity should be used in only a general way in deciding future wood procurement strategy because: (1) wood procurement patterns change from year to year, (2) the estimates of timber removals are based on logging utilization factors in 1965, which have undoubtedly changed since, and (3) allowable cut calculations are based on assumptions that may not be economically realistic (see Definition of Terms section). With these limitations in mind, companies requiring more industrial roundwood may want to consider procuring wood in counties where timber removals for industrial roundwood are low in relation to the acres of stocked commercial forest land and low as a percent of annual allowable cut.

---

[1] *Mills receiving roundwood or chips from roundwood are primary mills.*

[2] *Geographic area used by Forest Survey to report periodic inventories of the Nation's forest resources. See figure 1 for counties encompassed in each of the four Forest Survey Units in Michigan.*

Figure 1--*Primary wood-using plants in Michigan, 1972. Sawmills are classed by volume of lumber produced in 1972: large = 5 million board feet or more; medium = 1 to 4.999 million board feet. (Smaller sawmills not shown.)*

PULPWOOD

Pulpwood production reached 1.4 million cords in 1972. Nine out of 10 cords were roundwood; the rest was wood residue (used for pulpwood) from sawmills, veneer mills, and other mills. Since 1966, aspen[3] pulpwood output has generally declined, while harvesting of other hardwoods for pulpwood continued to in-

[3]*Common and scientific names of all species mentioned in this report are listed on page 9.*

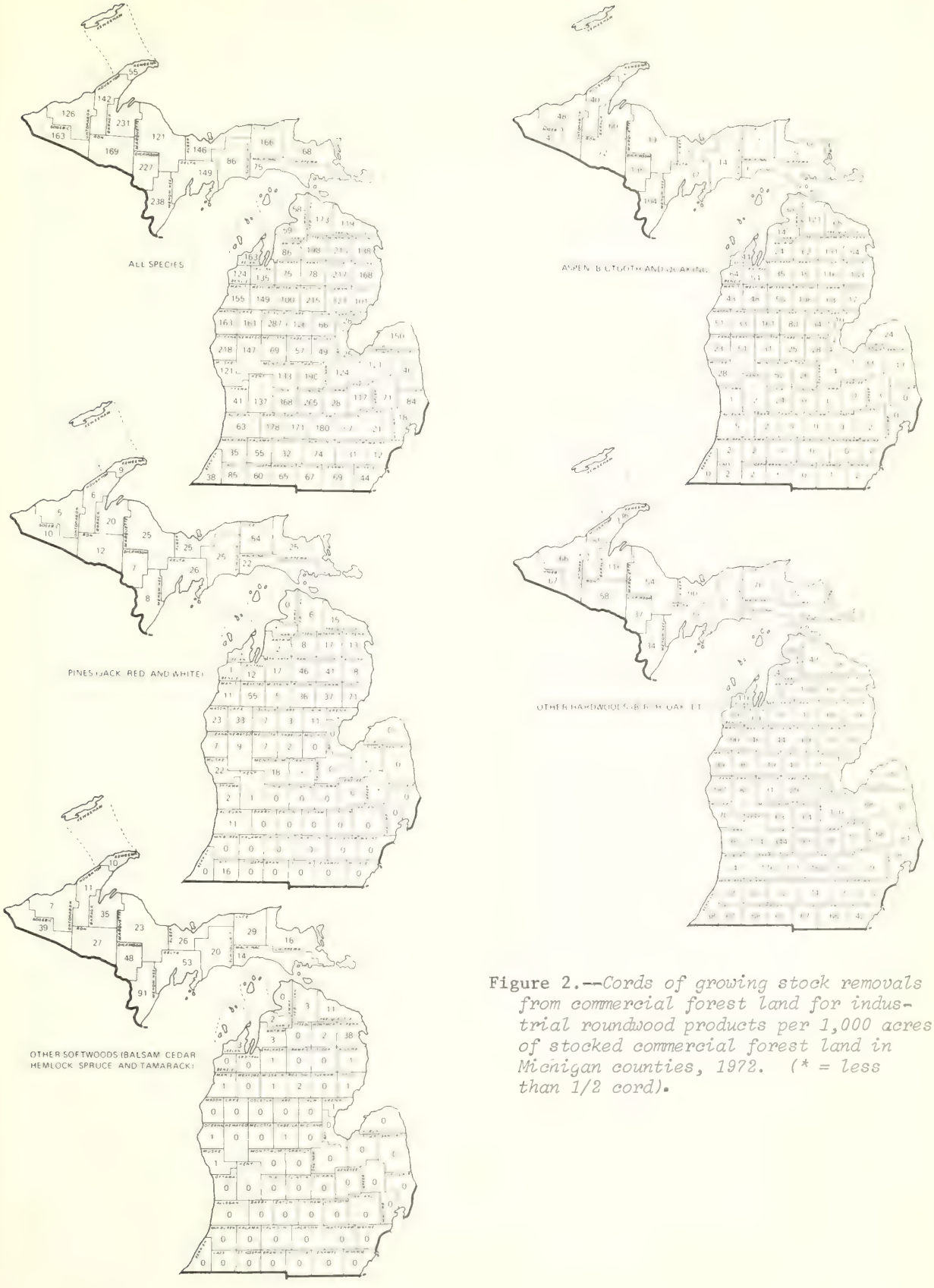

Figure 2.--*Cords of growing stock removals from commercial forest land for industrial roundwood products per 1,000 acres of stocked commercial forest land in Michigan counties, 1972. (* = less than 1/2 cord).*

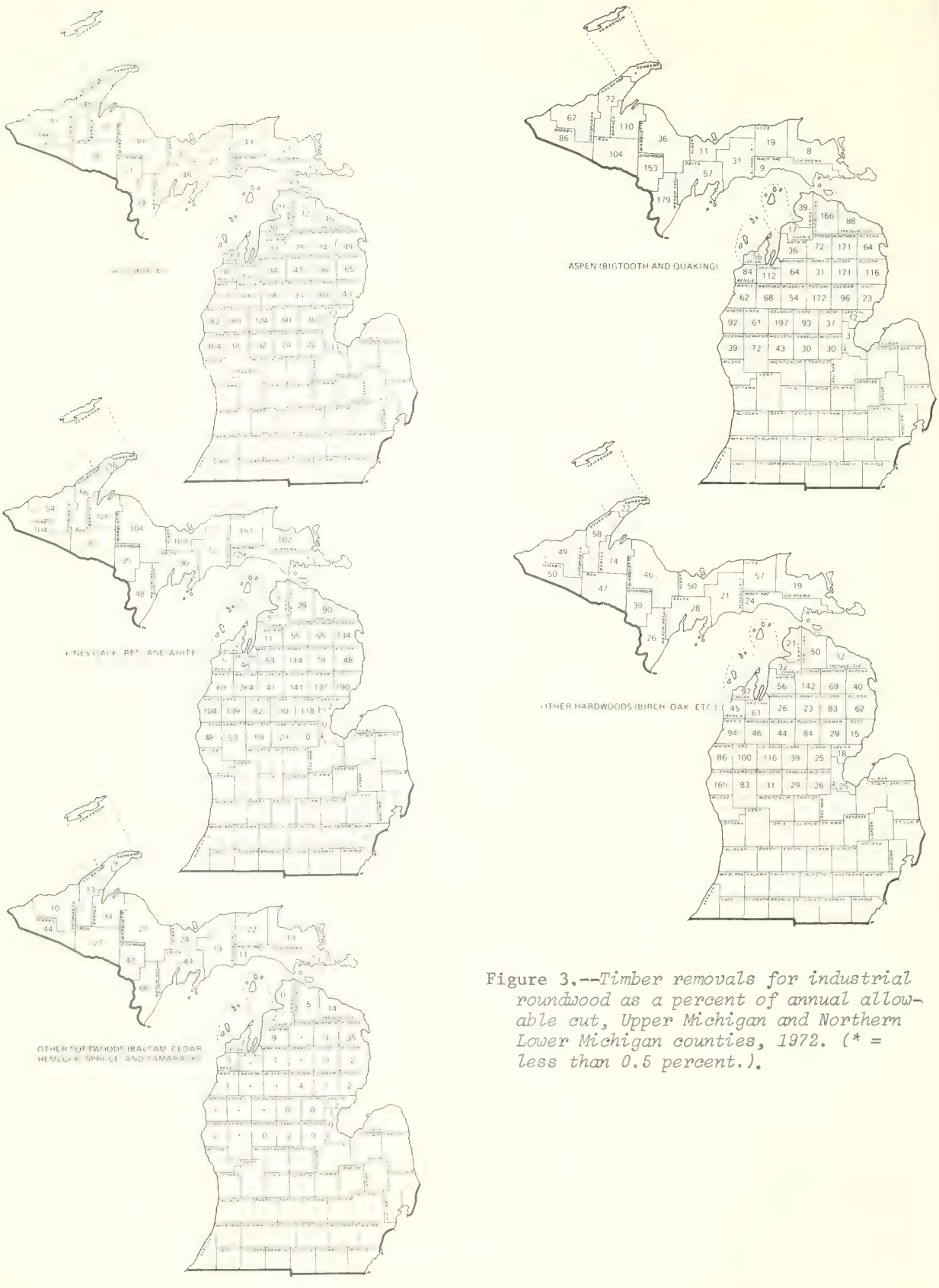

Figure 3.--*Timber removals for industrial roundwood as a percent of annual allowable cut, Upper Michigan and Northern Lower Michigan counties, 1972. (* = less than 0.5 percent.).*

crease (fig. 4). Pine pulpwood production has leveled off since 1966 after more than a decade of rising output. Harvesting of other softwoods for pulpwood has been generally decreasing since 1946.

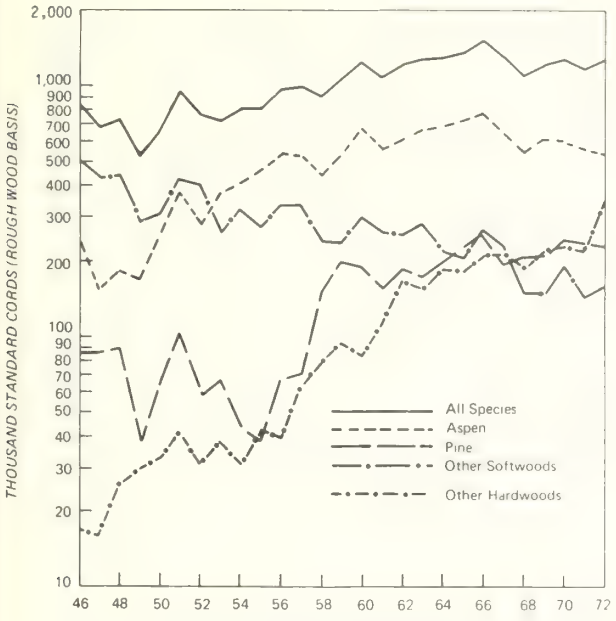

Figure 4.--*Michigan round pulpwood production by species groups, 1946-1972.*

Before 1961, little residue from Michigan's primary wood-using plants was used for pulpwood. Since then, use has expanded rapidly: more than 100,000 cords were procured annually between 1969 and 1972 (fig. 5).

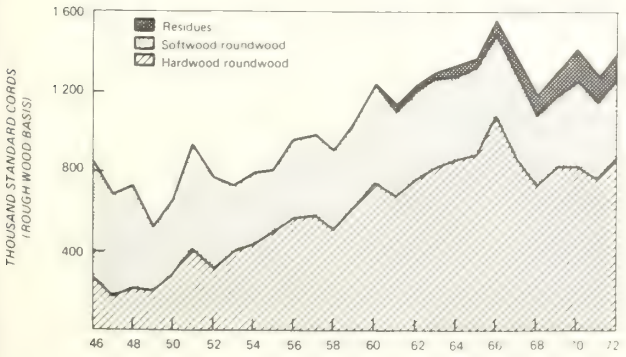

Figure 5.--*Michigan pulpwood production trends, 1946-1972.*

Michigan is a large exporter of pulpwood, primarily to Wisconsin. In 1972, Wisconsin mills received 469,000 cords from Michigan, 19 percent of their total wood requirements. All of these shipments were from the UP. Except for Keeweenaw, each UP county furnished pulpwood for seven or more mills in 1972 (fig. 6). Sixteen Wisconsin mills received pulpwood from this area.

Figure 6.--*Number of plants receiving pulpwood from Upper Michigan counties, 1972.*

Nine Michigan mills received 931,000 cords of pulpwood in 1972, of which 836,000 cords were roundwood. All but 14,000 cords were produced in Michigan. Aspen was the leading species followed by mixed hardwoods and pine. Pulpwood receipts increased greatly in 1959. Since then pulpwood procurement in Michigan has ranged from 700,000 to 1,000,000 cords.

Demand for mixed hardwood roundwood and hardwood residue at Michigan mills has been strong in recent years; demand for oak, aspen, and softwoods has been stable.

SAW LOGS

Michigan loggers harvested 454 million board feet of saw logs in 1972, up 7 percent from 1969. Major species cut were hard maple, aspen, red oak, and soft maple; principal softwoods were hemlock, white pine, and cedar.

Only 27 million board feet were shipped out-of-State, mainly to Wisconsin. More than half (58 percent) of the volume shipped to Wisconsin was aspen.

Aspen saw log production rose 20 million board feet (48 percent) between 1969 and 1972. Aspen is in increasing demand for construction lumber, pallets, crating, and dimension products.

The continuing spread of Dutch Elm Disease from south to north in Michigan probably accounted for the drop of 6.6 million board feet in elm saw logs harvested between 1969 and 1972. In the Southern LP, only 226,000 board feet of elm saw logs were cut, less than one-tenth the volume cut in 1969.

Saw log receipts in Michigan rose from 418 million board feet in 1969 to 430 million board feet in 1972. The increase was about equally divided between softwoods and hardwoods. Michigan is nearly self-sufficient in its saw log requirements: other States supplied only 2.7 million board feet of logs.

Average lumber output per sawmill is increasing because some small mills are closing, some larger mills are increasing their efficiency, and most new mills are larger than average. Output per mill was 5.8 times greater in 1972 than in 1954 and 14 percent higher than in 1969 (fig. 7).

Michigan's lumber production is strongly influenced by the operation of 17 large sawmills, each producing more than 5 million board feet annually. These mills (6 percent of the total) sawed 36 percent of Michigan's lumber in 1972.

The number of active sawmills declined from 307 in 1969 to 283 in 1972. From 1954 to 1969, the active sawmill population declined rapidly. Most of the mills closing were small ones.

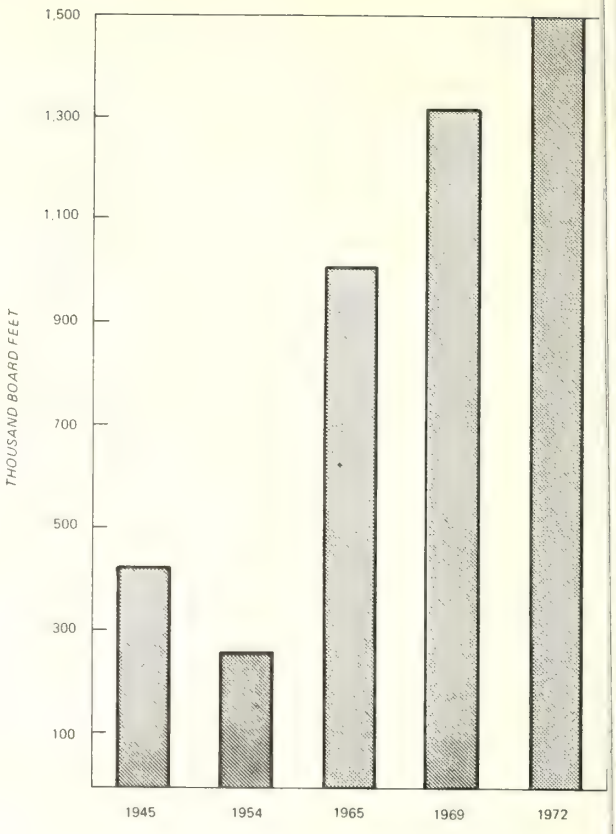

Figure 7.--*Average output per sawmill in Michigan.*

VENEER LOGS

Between 1946 and 1958 Michigan veneer-log production plummeted (fig. 8). The container veneer industry had severe setbacks during this period (1946-1958) as plastic and paperboard containers were substituted for veneer. Similarly, face veneers met stiff competition from plastic substitutes with wood-grain finishes.

From 1958 to 1972, Michigan veneer-log production has been on a plateau. The 1972 harvest of 18.5 million board feet[4] rebounded from only 15.0 million board feet in 1970, but was about the same as in 1960. Both standard veneer and container veneer-log production have stablized since 1958.

[4]*Does not include veneer logs received at Iron Wood Products Company (Gogebic County) to avoid disclosure of operations at this mill.*

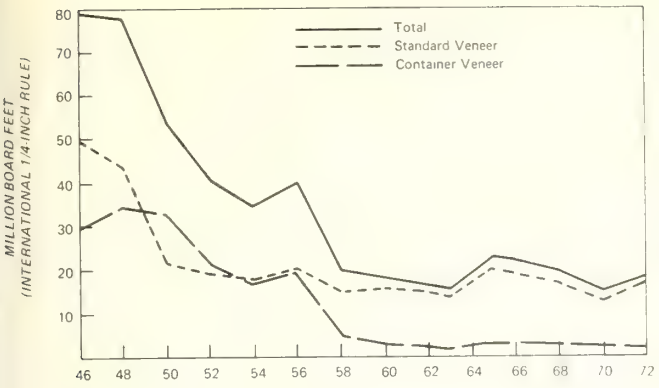

Figure 8.--*Veneer-log production in Michigan for selected years, 1946-1972. (Excludes veneer logs produced for Iron Wood Products Company.)*

One-fourth of the 1972 veneer-log harvest remained in Michigan. Wisconsin (10.8 million board feet) and Indiana (1.5 million board feet) were the major importers of Michigan veneer logs. Three-fourths of the volume was cut in the UP.

Veneer log receipts[4] in Michigan plunged from 9.6 million board feet at 11 mills in 1968 to 5.3 million board feet at 9 mills in 1972. The volume decline, which has been continuing for more than 2 decades, was most severe in paper birch and yellow birch. Michigan forests provided 86 percent of the log requirements of Michigan veneer mills in 1972; Canada supplied most of the imported volume.

OTHER PRODUCTS

Other industrial roundwood products cut in Michigan in 1972 were commercial posts, poles, piling, particleboard bolts, cabin logs, and shingle bolts. Twenty-three plants received 13.3 million cubic feet of these products cut in Michigan. Cabin log and pole production is concentrated in the Eastern UP and Northern LP, post production in the south central and eastern part of the UP and the northeast part of the LP, particleboard bolt production in the Northern LP, and piling production in the Southern LP.

PRIMARY PLANT RESIDUE

In 1972, primary wood-using plants (excluding pulpmills) in Michigan generated 21.2 million cubic feet of coarse residue, 11.5 million cubic feet of fine residue, and 13.9 million cubic feet of bark. The largest concentration of coarse residue not sold or used in the plant of origin was in the Northern LP. The quantity in each Survey Unit not sold or used in the plant of origin in 1972 was:

Unit	*Coarse residue (cords)* Softwood	Hardwood
Eastern UP	2,088	2,701
Western UP	359	309
Northern LP	4,375	34,637
Southern LP	29	9,873
All units	6,851	47,520

The largest quantities of fine residue not sold or used in the plant are in the Western UP and Northern LP:

Unit	*Fine residue (thousand cubic feet)* Softwood	Hardwood
Eastern UP	519.9	683.4
Western UP	254.4	1,865.8
Northern LP	211.6	2,174.7
Southern LP	2.7	451.2
All units	988.6	5,175.1

Each survey unit yielded 900,000 cubic feet or more of bark that was not sold or used in the plant of origin:

Unit	*Bark (thousand cubic feet)* Softwood	Hardwood
Eastern UP	880	828
Western UP	359	2,409
Northern LP	262	3,002
Southern LP	4	936
All units	1,505	7,175

For the entire State, the percent of each residue class not sold or used in the plant of origin was:

Class of residue	*Softwood (percent)*	*Hardwood (percent)*
Coarse	20	20
Fine	75	51
Bark	76	60

Thus, Michigan's primary mill operators have been reasonably successful in finding uses for their coarse residue but relatively unsuccessful in marketing their fine residue and bark. Estimates of residue in 1972 by type of disposal for each county are found in the Appendix. Individuals or firms desiring residue can use the county data in seeking sources.

OUTLOOK

Industrial roundwood production is likely to continue increasing in Michigan during the next 5 years. Pallet, furniture, railroad tie, paper, and paperboard markets are expected to remain strong for the next few years. Several plants have announced expansions and more sawmills will be built by 1978.

Log harvesting will probably increase most rapidly in the Eastern UP where the annual harvest of growing stock appears relatively light compared to the Western UP and the Northern LP.

If the price of softwood market pulp continues to rise, softwood pulpwood production will probably increase significantly in Michigan. Hardwood pulpwood production is likely to gain also as plant capacities are expanded. Softwood will also be in greater demand by the producers of construction lumber and preservative-treated products.

Use of sawmill residues for pulpwood will continue rising as wood waste disposal regulations are more strictly enforced, as more debarkers and chippers are installed, and as competition for roundwood intensifies.

The large quantity of sawdust and bark not sold or used in the plant of origin could become an important supplementary fuel for companies not capable of obtaining adequate quantities of other fuels.

STUDY METHODS

Data for this publication came from a complete canvass of primary wood-using firms using Michigan logs and bolts. All canvassing in Upper Michigan was done by the Institute of Wood Research, Michigan Technological University using mail questionnaires; follow-up on nonrespondents was by telephone and personal contact; as necessary estimates were made based on prior knowledge and contacts. All canvassing in Lower Michigan was done in a similar manner by the Forestry Division, Michigan Department of Natural Resources. The North Central Forest Experiment Station, using similar procedures, contacted out-of-State mills using Michigan roundwood. The Station edited and compiled the data.

DEFINITION OF TERMS

Timber removals for industrial roundwood--The volume of sound wood in growing-stock trees on commercial forest land removed annually for industrial roundwood products (including logging residues).

Industrial roundwood products--Saw logs, pulpwood, veneer logs, poles, commercial posts, piling, particleboard bolts, cabin logs, and shingle bolts.

Commercial forest land--Forest land that is producing or capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation. This includes areas suitable for growing crops of industrial wood generally in excess of 20 cubic feet per acre annually.

Growing-stock trees--All live trees of commercial species except rough and rotten trees.

Allowable cut--The volume of timber on commercial forest land that could be cut annually between 1966-1975 while improving tree stocking and bringing about a more even distribution of age classes. It includes one-tenth of the volume in stands that will reach or exceed rotation age between 1966-1975. It also includes stand improvement cuts (partial cuts) in overstocked stands. Stands selected for harvest cuts or cultural operations must yield at least 3 cords per acre to be included in the allowable cut. Allowable cut is based on the assumptions that all timber will be available and accessible when needed,

and that a ready market will exist for every species, size, and grade of material harvested. Further, it assumes that the proper sequence of cutting is known and will be followed, and that logging practices employed will result in an improved forest. Because there is no way of guaranteeing that these assumptions will be valid over the next 10 years, the allowable cut estimates can be compared with timber removals only in a general way.

Primary wood-using plant residue--Wood materials (coarse and fine) and bark not utilized for principal products at manufacturing plants using roundwood. These residues include wood products (byproducts) obtained incidental to production of principal products, and wood materials not utilized for some product.

Coarse plant residue--Wood residue suitable for chipping such as slabs, edgings, and veneer cores.

Fine plant residue--Wood residue not suitable for chipping, such as sawdust and veneer clippings.

COMMON AND SCIENTIFIC NAMES OF TREE SPECIES MENTIONED

SOFTWOOD SPECIES

Eastern white pine . . . . *Pinus strobus*
Red pine . . . . . *Pinus resinosa*
Jack pine . . . . . *Pinus banksiana*

Spruce:
  White spruce . . . . . *Picea glauca*
  Black spruce . . . . . *Picea mariana*

Balsam fir . . . . . *Abies balsamea*
Eastern hemlock . . . . *Tsuga canadensis*
Tamarack . . . . . *Larix laricina*
Northern white-cedar . *Thuja occidentalis*

HARDWOOD SPECIES

White oak:
  White oak . . . . . *Quercus alba*
  Bur oak . . . . . *Quercus macrocarpa*
  Chinkapin oak . *Quercus muehlenbergii*
  Swamp white oak . . . *Quercus bicolor*

Red oak:
  Northern red oak . . . . *Quercus rubra*
  Black oak . . . . . *Quercus velutina*
  Pin oak . . . . . *Quercus palustris*

Hickory:
  Bitternut hickory . *Carya cordiformis*
  Pignut hickory . . . . . *Carya glabra*
  Shagbark hickory . . . . . *Carya ovata*

Yellow birch . . . *Betula alleghaniensis*

Hard maple:
  Black maple . . . . . *Acer nigrum*
  Sugar maple . . . . . *Acer saccharum*

Soft maple:
  Red maple . . . . . *Acer rubrum*
  Silver maple . . . . . *Acer saccharinum*

American beech . . . . *Fagus grandifolia*

Ash:
  Black ash . . . . . *Fraxinus nigra*
  White ash . . . . . *Fraxinus americana*

Balsam poplar . . . *Populus balsamifera*

Aspen:
  Bigtooth aspen . *Populus grandidentata*
  Quaking aspen . . *Populus tremuloides*

Eastern cottonwood . . *Populus deltoides*

American basswood . . . *Tilia americana*

Black walnut . . . . . *Juglans nigra*

Elm:
  American elm . . . . . *Ulmus americana*
  Rock elm . . . . . *Ulmus thomasii*
  Slippery elm . . . . . *Ulmus rubra*

Paper birch . . . . . *Betula papyrifera*

Table 1.--*Industrial roundwood production in Michigan, 1954, 1965, 1969, 1972*
(In million cubic feet)

Product	All species				Softwoods				Hardwoods			
	1954	1965	1969	1972	1954	1965	1969	1972	1954	1965	1969	1972
Pulpwood	61.7	103.8	93.2	99.4	28.6	33.9	28.0	30.4	33.1	69.9	65.3	69.0
Saw logs	62.6	57.2	62.9	67.8	15.7	5.7	7.4	8.9	46.9	51.5	55.5	58.9
Veneer logs	5.3	3.0	2.6	2.5	1/	1/	1/	1/	5.3	3.0	2.6	2.5
Poles & piling	.4	.2	.2	.6	.2	.1	.1	.5	.2	.1	.1	.1
Mine timbers	3.7	1.2	1.0	3/	2.5	1.1	1.0	3/	1.2	.2	1/	3/
Posts 2/	2.8	3.6	3.0	3.0	2.8	3.6	3.0	3.0	--	--	--	--
Miscellaneous	13.3	6.8	10.9	4/10.6	.6	.8	2.5	4/ .8	12.7	6.0	8.4	4/9.8
Total	149.8	175.8	173.8	183.9	50.4	45.2	42.0	43.6	99.4	130.7	131.8	140.3

1/ Less than 50 thousand cubic feet.
2/ Includes only posts processed at fence and treating plants.
3/ Not available.
4/ Includes particleboard bolts, cabin logs, shingle bolts, and Michigan veneer logs used by Iron Wood Products Company.

Table 2.--*Volume of industrial roundwood production in Michigan, 1972*

Product	Standard units	Thousand standard units			Thousand cubic feet		
		All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
Pulpwood	Standard cords	1,258	384	874	99,392	30,334	69,048
Saw logs	Board feet 1/	454,431	59,344	395,087	67,798	8,898	58,900
Veneer logs	Board feet 2/	18,479	3	18,476	2,517	3/	2,517
Piling	Linear feet	63	--	63	51	--	51
Poles	Pieces	64	64	--	542	542	--
Posts 4/	Pieces	2,962	2,962	--	3,038	3,038	--
Miscellaneous 5/	Cubic feet	10,568	779	9,789	10,568	779	9,789
Total		--	--	--	183,906	43,601	140,305

1/ International 1/4-inch rule.
2/ International 1/4-inch rule; does not include veneer logs produced for Iron Wood Products Corp.
3/ Less than 500 cubic feet.
4/ Includes only posts processed at fence and treating plants.
5/ Includes cabin logs, shingle bolts, and particleboard bolts, and veneer logs produced for Iron Wood Products Corp.

Table 3.--*Number of active primary wood-using plants in Michigan, 1954, 1965, 1969, 1972*

Kind of plant[1/]	1954	1965	1969	1972
Pulpmills	11	10	9	9
Sawmills				
Large[2/]	11	15	17	17
Medium[3/]	85	107	103	109
Small[4/]	1,296	266	187	157
Total	1,392	388	307	283
Veneer mills				
Face, core & specialty	4	4	[5/] 6	4
Container	19	8	6	5
Total	23	12	12	9
Charcoal	2	1	--	--
Miscellaneous	102	26	19	[6/] 23
Grand total	1,530	437	347	324

1/ Number of active small sawmills estimated for 1954.

2/ Annual lumber production in excess of 5 million board feet.

3/ Annual lumber production from 1 million to 5 million board feet.

4/ Annual lumber production less than 1 million board feet.

5/ One mill classified as a container veneer mill in 1965 is now classified as a specialty veneer mill.

6/ Includes 1 shingle mill, 6 log cabin plants, 1 particleboard plant, 4 treating plants, and 11 fence plants.

Table 4.--*Major industrial roundwood receipts by type of plant in Michigan, 1954, 1965, 1969, 1*
(In million cubic feet)

Type of plant	All species				Softwoods				Hardwoods			
	1954	1965	1969	1972	1954	1965	1969	1972	1954	1965	1969	1972
Pulpmills	32.3	65.2	54.1	66.0	14.5	17.7	12.1	15.6	17.8	47.5	42.0	50.4
Sawmills	70.3	57.4	62.3	64.0	16.5	5.7	7.8	8.3	53.8	51.7	54.5	55.7
Other mills[1/]	13.1	12.5	15.7	15.7	3.6	4.9	5.3	4.2	9.5	7.6	10.4	11.5
Total	115.7	135.1	132.1	145.7	34.6	28.3	25.2	28.1	81.1	106.8	106.9	117.6

1/ Does not include treating plants.

Table 5.--*Growing stock removals for industrial roundwood by species group, unit, and county in Michigan, 1972*
(In thousand cubic feet)

Unit and County	Balsam Fir	Cedar	Hemlock	1/ Pine	Spruce	Tamarack	Aspen	Birch	Oak	Other Hardwoods	All Species
E. Upper Peninsula											
Alger	212	165	604	1,060	101	22	222	355	10	3,414	6,165
Chippewa	321	227	161	1,522	197	18	272	126	4	1,234	4,082
Delta	816	1,044	347	1,255	375	26	1,805	379	3	1,230	7,280
Luce	262	101	499	2,254	293	26	305	247	1	2,888	6,876
Mackinac	160	197	119	984	110	11	284	175	2	1,256	3,298
Menominee	640	2,200	511	326	276	29	4,169	234	0	1,154	9,539
Schoolcraft	401	151	183	1,255	258	18	708	253	4	1,103	4,334
Unit total	2,812	4,085	2,424	8,656	1,610	150	7,765	1,769	24	12,279	41,574
W. Upper Peninsula											
Baraga	136	60	1,043	839	212	25	2,504	1,046	114	3,699	9,678
Dickinson	401	193	763	258	313	25	4,745	256	10	1,056	8,020
Gogebic	204	25	1,667	490	58	0	2,337	559	16	2,768	8,124
Houghton	56	14	312	266	74	3	1,749	310	124	3,266	6,174
Iron	574	5	521	662	314	4	3,879	355	16	2,756	9,086
Keweenaw	52	54	0	154	55	0	3	137	93	370	918
Marquette	612	191	617	2,156	476	62	1,614	807	114	3,723	10,372
Ontonagon	36	11	343	282	26	2	2,681	203	9	3,523	7,116
Unit Total	2,071	553	5,266	5,107	1,528	121	19,512	3,673	496	21,161	59,488
N. Lower Peninsula											
Alcona	19	8	0	201	5	0	2,575	227	757	418	4,210
Alpena	227	383	0	215	0	0	869	111	75	352	2,232
Antrim	34	9	6	26	0	0	339	22	46	762	1,244
Arenac	0	9	0	2	0	0	79	5	39	91	225
Bay	0	0	0	0	0	0	8	0	6	77	91
Benzie	0	0	0	5	0	0	601	55	131	367	1,159
Charlevoix	0	10	3	6	0	0	183	6	12	519	739
Cheboygan	37	44	0	160	0	0	3,134	232	68	817	4,492
Clare	0	0	0	48	0	0	1,416	92	338	320	2,214
Crawford	3	0	0	1,075	0	0	345	1	214	200	1,838
Emmet	0	0	0	0	0	0	430	4	51	345	830
Gladwin	0	0	0	154	0	0	487	7	96	199	943
Grand Traverse	0	0	1	145	0	0	666	71	183	607	1,673
Iosco	0	19	0	1,338	0	0	324	6	56	158	1,901
Isabella	0	6	0	15	0	0	187	0	56	166	430
Kalkaska	4	7	3	358	0	0	731	35	223	214	1,575
Lake	0	0	1	758	0	0	748	21	1,483	674	3,685
Leelanau	0	1	26	2	0	0	375	40	29	920	1,393
Manistee	0	0	5	196	0	0	734	45	824	840	2,644
Mason	0	0	2	279	0	0	623	45	629	412	1,990
Mecosta	0	0	0	79	0	0	348	4	128	216	775
Midland	0	0	0	0	0	0	368	3	26	239	636
Missaukee	0	0	0	88	0	11	871	57	393	326	1,746
Montmorency	18	15	0	381	0	0	2,936	105	687	610	4,752
Newaygo	0	0	1	291	0	0	1,211	34	1,245	807	3,517
Oceana	0	0	6	80	0	0	260	7	960	1,177	2,490
Ogemaw	6	0	0	686	0	0	1,170	38	231	236	2,367
Osceola	0	1	1	96	0	0	2,144	99	595	899	3,835
Oscoda	0	0	0	967	0	0	2,722	137	703	585	5,114
Otsego	0	0	2	149	0	0	1,204	44	115	2,317	3,831
Presque Isle	113	140	0	330	0	0	1,441	234	63	328	2,649
Roscommon	38	10	0	747	0	0	2,256	49	860	530	4,490
Wexford	0	0	2	942	0	0	826	55	338	388	2,551
Unit Total	499	662	59	9,747	5	11	32,611	1,891	11,660	17,116	74,261

(Table 5 cont. on next page)

(Table 5 cont.)

Unit and County	Balsam Fir	Cedar	Hemlock	1/ Pine	Spruce	Tamarack	Aspen	Birch	Oak	Other Hardwoods	All Species
S. Lower Peninsula											
Allegan	0	0	0	113	0	0	52	0	268	239	672
Barry	0	0	0	0	0	0	14	0	588	582	1,184
Berrien	0	0	0	0	0	0	0	0	26	165	191
Branch	0	0	0	0	0	0	1	0	127	128	256
Calhoun	0	0	0	0	0	0	0	0	111	117	228
Cass	0	1	0	79	0	0	8	3	80	256	427
Clinton	0	0	0	0	0	0	0	0	376	482	858
Eaton	0	0	0	0	0	0	0	0	318	384	702
Genessee	0	0	0	0	0	0	0	0	230	251	481
Gratiot	0	0	0	2	0	0	94	0	303	293	692
Hillsdale	0	0	0	0	0	0	0	1	104	224	329
Huron	0	0	0	0	0	0	108	37	80	451	676
Ingham	0	0	0	0	0	0	0	1	284	468	753
Ionia	0	0	0	0	0	0	108	0	609	968	1,685
Jackson	0	0	0	0	0	0	0	0	203	294	497
Kalamazoo	0	0	0	0	0	0	12	0	152	131	295
Kent	0	0	1	7	0	0	14	0	491	762	1,275
Lapeer	0	0	0	2	0	0	19	0	186	209	416
Lenawee	0	0	0	0	0	0	6	0	111	193	310
Livingston	0	0	0	0	0	0	0	0	173	197	370
Macomb	0	0	0	0	0	0	0	0	20	38	58
Monroe	0	0	0	0	0	0	6	0	50	55	111
Montcalm	0	0	0	177	0	0	517	0	250	366	1,310
Muskegon	0	0	1	280	0	0	345	0	335	543	1,504
Oakland	0	0	0	0	0	0	15	0	134	54	203
Ottawa	0	0	0	11	0	0	8	0	189	42	250
Saginaw	0	0	0	0	0	0	29	0	405	445	879
St.Clair	0	0	0	0	0	0	0	0	223	246	469
St.Joseph	0	0	0	0	0	0	9	0	134	98	241
Sanilac	0	0	0	0	0	0	64	0	36	122	222
Shiawassee	0	0	0	0	0	0	0	0	29	59	88
Tuscola	0	0	0	1	0	0	254	0	271	391	917
Van Buren	0	0	0	0	0	0	11	0	50	190	251
Washtenaw	0	0	0	0	0	0	0	0	118	69	187
Wayne	0	0	0	0	0	0	0	0	0	31	31
Unit Total	0	1	2	672	0	0	1,694	42	7,064	9,543	19,018
State Total	5,382	5,301	7,751	24,182	3,143	282	61,582	7,375	19,244	60,099	194,341

1/ Includes White, Red, and Jack Pine

Table 6.--*Sawtimber removals for industrial roundwood by species group, unit, and county in Michigan, 1972*
(In thousand board feet, International 1/4-inch rule)

Unit and county	Balsam fir	Cedar	Hemlock	Pine[1]	Spruce	Tamarack	Aspen	Birch	Oak	Other hardwoods	All species
E. Upper Peninsula											
Alger	730	310	3,825	3,759	408	89	533	2,059	70	20,653	32,436
Chippewa	1,177	960	902	4,942	790	71	968	745	29	7,283	17,867
Delta	2,805	2,678	1,912	3,806	1,497	108	4,287	2,025	23	5,913	25,054
Luce	900	242	3,077	9,392	1,172	108	1,223	1,477	8	17,737	35,336
Mackinac	571	795	683	4,556	450	42	1,009	919	18	6,723	15,766
Menominee	2,201	5,787	3,191	1,709	1,103	115	10,147	1,273	0	6,315	31,841
Schoolcraft	1,377	253	1,008	3,923	1,027	70	1,655	1,426	33	6,271	17,043
Unit total	9,761	11,025	14,598	32,087	6,447	603	19,822	9,924	181	70,895	175,343
W. Upper Peninsula											
Baraga	467	281	6,561	2,840	873	99	6,104	6,528	741	21,835	46,329
Dickinson	1,380	456	4,743	1,100	1,252	99	11,423	1,464	71	6,010	27,998
Gogebic	736	138	10,234	2,638	286	0	10,860	3,607	109	16,441	45,049
Houghton	213	73	1,855	1,568	329	9	6,270	1,964	814	20,294	33,389
Iron	1,982	22	3,071	3,712	1,289	17	11,792	2,235	113	14,650	38,883
Keweenaw	177	75	0	1,033	242	0	17	895	610	2,412	5,461
Marquette	2,106	418	3,632	8,375	1,912	266	4,320	4,776	766	21,687	48,258
Ontonagon	161	57	2,007	1,787	118	8	11,856	1,193	62	16,591	33,840
Unit total	7,222	1,520	32,103	23,053	6,301	498	62,642	22,662	3,286	119,920	279,207
N. Lower Peninsula											
Alcona	84	39	0	588	26	0	7,313	465	1,634	1,230	11,379
Alpena	887	1,580	0	529	0	0	2,577	271	156	921	6,921
Antrim	136	51	44	100	0	0	1,832	138	289	5,003	7,593
Arenac	0	51	0	18	0	0	364	16	253	594	1,296
Bay	0	0	0	0	0	0	47	0	48	520	615
Benzie	0	0	0	12	0	0	1,773	109	297	1,616	3,807
Charlevoix	0	14	17	39	0	0	986	43	78	3,401	4,578
Cheboygan	146	204	0	445	0	0	10,236	901	223	3,786	15,941
Clare	0	0	0	189	0	0	4,057	217	1,453	1,169	7,085
Crawford	11	0	0	2,957	0	0	1,259	9	544	612	5,392
Emmet	0	0	1	0	0	0	1,428	31	299	1,967	3,726
Gladwin	0	0	0	386	0	0	2,167	22	414	1,194	4,183
Grand Traverse	0	0	9	401	0	0	1,771	150	724	2,788	5,843
Iosco	0	103	0	3,395	0	0	1,465	12	203	1,003	6,181
Isabella	0	12	0	101	0	0	556	0	355	1,002	2,026
Kalkaska	12	19	22	947	0	0	2,363	121	1,047	1,106	5,637
Lake	0	0	9	1,878	0	0	2,084	62	4,351	2,175	10,559
Leelanau	0	8	176	13	0	0	1,291	119	131	5,397	7,135
Manistee	0	0	37	533	0	0	1,991	107	3,219	3,450	9,337
Mason	0	0	10	728	0	0	1,647	101	2,430	1,698	6,614
Mecosta	0	0	0	208	0	0	895	8	340	512	1,963
Midland	0	0	0	0	0	0	1,259	23	172	1,513	2,967
Missaukee	0	0	0	240	0	59	2,574	158	1,637	1,374	6,042
Montmorency	58	49	0	1,181	0	0	9,316	310	2,008	2,182	15,104
Newaygo	0	0	7	591	0	0	3,856	80	5,892	2,298	12,724
Oceana	0	0	39	306	0	0	750	36	5,325	5,507	11,963
Ogemaw	19	0	0	1,815	0	0	4,872	150	1,092	1,168	9,116
Osceola	0	5	6	291	0	0	6,290	194	1,889	3,725	12,400
Oscoda	0	0	0	2,835	0	0	8,750	325	2,675	1,668	16,253
Otsego	0	2	16	482	0	0	3,865	261	353	6,199	11,178
Presque Isle	365	490	0	980	0	0	4,472	555	137	1,283	8,282
Roscommon	118	14	0	2,237	0	0	7,364	178	3,440	1,439	14,790
Wexford	0	0	11	2,585	0	0	2,264	124	1,481	1,606	8,071
Unit total	1,836	2,641	404	27,010	26	59	103,734	5,296	44,589	71,106	256,701

(Table 6 cont. on next page)

(Table 6 cont.)

Unit and county	Balsam fir	Cedar	Hemlock	Pine[1]	Spruce	Tamarack	Aspen	Birch	Oak	Other hardwoods	All species
S. Lower Peninsula											
Allegan	0	0	0	415	0	0	146	0	1,360	1,534	3,455
Barry	0	0	0	0	0	0	78	0	3,775	3,806	7,659
Berrien	0	0	0	0	0	0	0	0	177	1,080	1,257
Branch	0	0	0	0	0	0	5	0	808	851	1,664
Calhoun	0	0	0	0	0	0	0	0	702	766	1,468
Cass	0	7	0	207	0	0	28	23	524	1,660	2,449
Clinton	0	0	0	0	0	0	0	0	2,400	3,111	5,511
Eaton	0	0	0	0	0	0	0	0	2,040	2,516	4,556
Genessee	0	0	0	0	0	0	0	0	1,473	1,654	3,127
Gratiot	0	0	0	3	0	0	286	0	1,907	1,817	4,013
Hillsdale	0	0	0	0	0	0	0	8	663	1,470	2,141
Huron	0	0	0	0	0	0	585	248	521	2,973	4,327
Ingham	0	0	0	0	0	0	0	8	1,817	3,061	4,886
Ionia	0	0	0	0	0	0	322	0	3,894	6,251	10,467
Jackson	0	0	0	0	0	0	0	0	1,301	1,926	3,227
Kalamazoo	0	0	0	0	0	0	68	0	972	856	1,896
Kent	0	0	8	39	0	0	75	4	3,141	4,913	8,180
Lapeer	0	0	0	11	0	0	103	0	1,189	1,375	2,678
Lenawee	0	0	0	0	0	0	34	0	711	1,298	2,043
Livingston	0	0	0	0	0	0	0	0	1,107	1,271	2,378
Macomb	0	0	0	0	0	0	0	0	135	253	388
Monroe	0	0	0	0	0	0	34	0	319	360	713
Montcalm	0	0	0	688	0	0	1,680	0	1,537	2,173	6,078
Muskegon	0	0	6	714	0	0	967	2	2,132	1,500	5,321
Oakland	0	0	0	0	0	0	84	0	851	359	1,294
Ottawa	0	0	0	30	0	0	47	0	1,200	279	1,556
Saginaw	0	0	0	0	0	0	76	0	2,557	2,855	5,488
St. Clair	0	0	0	0	0	0	0	0	1,418	1,631	3,049
St. Joseph	0	0	0	0	0	0	34	0	843	648	1,525
Sanilac	0	0	0	0	0	0	341	0	237	809	1,387
Shiawassee	0	0	0	0	0	0	0	0	189	390	579
Tuscola	0	0	0	4	0	0	1,371	0	1,732	2,565	5,672
Van Buren	0	0	0	0	0	0	53	0	314	1,289	1,656
Washtenaw	0	0	0	0	0	0	0	0	752	466	1,218
Wayne	0	0	0	0	0	0	0	0	0	201	201
Unit total	0	7	14	2,111	0	0	6,417	293	44,698	59,967	113,507
State total	18,819	15,193	47,119	84,261	12,774	1,160	192,615	38,175	92,754	321,888	824,758

[1] Includes white, red, and jack pine.

Table 7.--*Michigan pulpwood production by species groups, 1946-1972*
(In thousand standard cords, rough wood basis)

Year	Aspen	Balsam fir	Birch	Hemlock	Pine	Spruce	Tamarack	Misc. hardwoods	Cedar	Soft-wood residue	Hard-wood residue	Total
1946	246	117	9	250	85	127	3	8	--	--	--	845
1947	153	139	6	149	86	134	2	10	--	--	--	679
1948	182	163	7	132	89	133	2	19	--	1	--	728
1949	168	124	5	62	38	97	1/	25	1/	--	--	519
1950	251	123	6	84	66	99	1/	28	1/	--	--	657
1951	371	140	8	169	103	110	1/	34	--	--	--	935
1952	275	153	8	125	58	120	1/	23	--	--	--	762
1953	365	102	5	71	67	81	1/	33	--	--	--	724
1954	404	137	5	62	43	119	1	26	--	--	--	797
1955	459	122	4	36	38	111	1/	38	--	--	--	808
1956	537	119	4	88	67	115	1/	36	--	--	--	966
1957	521	147	7	61	70	118	1/	56	--	--	--	980
1958	434	115	1	35	149	86	1	79	--	--	--	900
1959	523	109	4	39	197	83	3	90	--	5	--	1,053
1960	669	135	9	46	188	108	5	75	--	2	--	1,237
1961	558	115	16	44	156	96	4	96	--	21	--	1,106
1962	601	104	21	57	184	86	4	144	--	22	--	1,223
1963	662	121	23	62	174	88	3	131	--	33	--	1,297
1964	674	85	38	59	198	72	3	146	--	5	42	1,322
1965	704	74	32	64	224	65	2	149	--	5	46	1,365
1966	777	88	12	99	251	74	1	194	--	4	71	1,571
1967	646	90	11	60	193	75	1	200	--	3	65	1,344
1968	540	62	13	45	205	39	2	172	--	6	84	1,168
1969	606	44	23	63	207	39	2	196	--	8	114	1,302
1970	596	67	33	69	239	51	3	196	--	10	142	1,406
1971	548	53	23	43	235	45	2	196	--	13	109	1,267
1972	529	60	36	50	229	38	3	309	4	21	122	1,401

1/ Less than 500 cords.

Table 8.--*Pulpwood receipts in Michigan for selected years, 1946-1972*
(In thousand standard cords, rough wood basis)

Year	Roundwood						Soft-wood residue	Hard-wood residue	Total
	Pine	Spruce	Other soft-woods	Aspen	Oak 1/	Other hard-woods 1/			
1946	85	133	121	69	--	8	--	--	416
1953	75	101	100	142	--	33	--	--	451
1960	128	94	87	431	11	59	--	--	810
1961	109	75	68	351	39	58	--	--	700
1962	97	29	35	387	41	90	--	--	679
1963	84	79	49	398	46	86	--	--	742
1964	107	68	40	429	49	96	--	2	791
1965	114	71	39	436	56	91	--	18	825
1966	143	78	49	526	61	106	--	41	1,004
1967	117	81	48	323	85	82	--	38	774
1968	133	61	38	328	59	99	--	56	774
1969	116	16	21	358	79	94	--	87	771
1970	152	22	29	332	70	112	11	77	805
1971	115	17	21	298	79	108	1	61	700
1972	127	14	56	322	78	239	9	86	931

1/ Oak receipts from Upper Peninsula counties are included with other hardwoods--the volume is not significant.

Table 9.--*Pulpwood receipts in Michigan by area of origin, roundwood and residues, 1946-1972*
(In thousand standard cords, rough wood basis)

Year	Roundwood					Residues			Total
	Area of origin					Area of origin			
	Mich.	Wis.	Minn.	Other states	Canada	Mich.	Wis.	Other states	
1946	259	--	12	--	145	--	--	--	416
1947	239	42	21	--	142	--	--	--	444
1948	270	--	22	1	191	1	--	--	485
1949	130	--	3	1/	125	--	--	--	258
1950	258	--	3	--	122	--	--	--	383
1951	398	4	9	1	170	--	--	--	582
1952	290	5	1	2	151	--	--	--	449
1953	319	11	11	1/	110	--	--	--	451
1954	309	1/	4	1/	99	--	--	--	412
1955	356	--	5	--	94	--	--	--	455
1956	437	--	7	--	91	--	--	--	535
1957	427	--	9	--	97	--	--	--	533
1958	458	--	7	--	84	--	--	--	549
1959	602	3	7	--	86	1	--	--	699
1960	727	1/	1/	--	83	--	--	--	810
1961	628	1	--	--	71	--	--	--	700
1962	677	1	1	--	--	--	--	--	679
1963	669	2	--	--	71	--	--	--	742
1964	728	1	--	--	59	3	--	--	791
1965	732	1	--	--	74	18	--	--	825
1966	862	3	1/	1	97	40	--	1	1,004
1967	651	1/	1/	1/	85	34	--	4	774
1968	653	3	1/	1/	62	49	1	6	774
1969	681	2	--	--	2	71	6	9	771
1970	714	1	1/	1/	2	70	8	10	805
1971	638	1/	1/	--	1/	51	--	11	700
1972	833	3	--	1/	--	84	--	11	931

1/ Less than 500 cords.

Table 10.--*Michigan pulpwood production by species groups and destination, 1972*
(In thousand standard cords, rough wood basis)

Species	Destination of wood			
	Michigan	Wisconsin	Other states and Canada	Total
Roundwood:[1]				
Pine	127	101	--	228
Spruce	14	24	--	38
Balsam fir	28	33	--	61
Hemlock	22	28	--	50
Tamarack	2	1	--	3
Cedar	4	--	--	4
Aspen	322	207	[2]	529
Oak[3]	78	--	--	78
Birch	34	2	--	36
Other hardwoods[4]	202	28	1	231
Total	833	424	1	1,258
Residues:				
Softwoods	9	3	9	21
Hardwoods	75	42	4	121
All material	917	469	14	1,400

1/ Includes chips from roundwoods.
2/ Less than 500 cords.
3/ Excludes a small quantity of oak from the Upper Peninsula.
4/ Includes small quantity of oak from Upper Peninsula.

Table 11.--*Pulpwood receipts in Michigan by species group and area of origin, 1972*
(In thousand standard cords, rough wood basis)

Species groups	Area of origin				
	Michigan	Wisconsin	Other states	Canada	Total
Roundwood:[1]					
Pine	127	--	[2]	--	127
Spruce	14	--	--	--	14
Balsam fir	27	--	--	--	27
Hemlock	22	--	--	--	22
Tamarack	3	--	--	--	3
Cedar	4	--	--	--	4
Aspen	322	--	--	--	322
Oak	78	--	--	--	78
Birch	34	1	--	--	35
Other hardwoods	202	2	--	--	204
Total	833	3	[2]	--	836
Residues:					
Softwoods	9	--	--	--	9
Hardwoods	75	--	11	--	86
All material	917	3	11	--	931

1/ Includes chips from roundwood.
2/ Less than 500 cords.

Table 12.--*Pulpwood production from roundwood by county and species groups in Michigan, 1972*
(In hundred standard cords, rough wood basis)

Unit and county[1]	All species	Aspen	Balsam	Birch	Hemlock	Pine	Spruce	Tamarack	Oak	Other hardwoods	Cedar
E. Upper Peninsula:											
Alger	314	27	26	17	25	110	13	3	2/	89	4
Chippewa	315	15	31	5	18	176	25	2	2/	40	3
Delta	721	220	99	29	41	154	48	3	2/	124	3
Luce	351	17	32	10	27	169	38	3	2/	50	5
Mackinac	227	24	18	14	12	64	13	1	2/	79	2
Menominee	736	501	78	13	24	16	35	4	2/	63	2
Schoolcraft	411	87	48	14	21	149	33	2	2/	54	3
Unit total	3,439	891	332	102	168	838	205	18	2/	499	22
W. Upper Peninsula:											
Baraga	624	301	16	18	46	93	25	3	2/	118	4
Dickinson	779	575	49	8	38	21	40	3	2/	43	2
Gogebic	336	120	22	2	98	20	3	--	2/	71	--
Houghton	236	144	5	3	24	7	7	3/	2/	46	3/
Iron	762	398	69	4	43	24	37	1	2/	186	3/
Keweenaw	11	--	6	--	--	--	5	--	2/	--	--
Marquette	744	181	74	27	52	203	60	6	2/	133	8
Ontonagon	570	156	2	7	29	2	2	3/	2/	372	3/
Unit total	4,601	1,875	243	69	330	370	179	13	2/	969	14
N. Lower Peninsula:											
Alcona	440	263	1	27	--	22	--	--	87	40	--
Alpena	151	77	9	12	--	15	--	--	8	30	--
Antrim	2	--	--	--	--	2	--	--	--	--	--
Arenac	3	3	--	3/	--	--	--	--	3/	3/	--
Benzie	108	64	--	7	--	1	--	--	15	21	--
Cheboygan	141	93	3/	17	--	4	--	--	4	23	--
Clare	163	113	--	10	--	3	--	--	16	21	--
Crawford	149	16	3/	--	--	122	--	--	4	7	--
Gladwin	49	20	-	1	--	19	--	--	5	4	--
Grand Traverse	146	79	--	8	--	16	--	--	13	30	--
Iosco	181	12	--	1	--	162	--	--	4	2	--
Isabella	22	19	--	--	--	--	--	--	--	3	--
Kalkaska	101	41	3/	3	--	42	--	--	8	7	--
Lake	380	85	--	2	--	93	--	--	140	60	--
Leelanau	52	32	--	4	--	--	--	--	2	14	--
Manistee	222	85	--	5	--	22	--	--	56	54	--
Mason	182	74	-	5	--	33	--	--	44	26	--
Mecosta	89	43	--	3/	--	9	--	--	13	24	--
Midland	34	32	--	--	--	-	--	--	--	2	--
Missaukee	125	73	--	6	--	10	--	--	17	19	--
Montmorency	279	178	2	10	--	15	--	--	56	18	--
Newaygo	284	117	--	4	--	26	--	-	56	81	--
Oceana	116	29	--	1	--	6	--	-	22	58	--
Ogemaw	155	50	1	3	--	80	--	-	10	11	--
Osceola	361	230	--	12	--	10	--	-	52	57	--
Oscoda	391	184	--	15	--	85	--	--	50	57	--
Otsego	51	31	--	1	--	9	--	--	1	9	--
Presque Isle	211	124	11	26	--	30	--	--	7	13	--
Roscommon	348	151	5	4	--	79	--	--	55	54	--
Wexford	248	91	--	6	--	108	--	--	19	24	--
Unit total	5,381	2,409	4	169	--	1,023	--	--	764	769	--
S. Lower Peninsula:											
Allegan	-	-	--	--	-	-	--	--	10	1	--
Barry	--	--	-	--	--	--	--	--	3/	3/	--
Berrien	1	-	-	--	--	--	--	--	3/	1	--
Cass	11	1	--	--	--	-	--	--	--	1	--
Gratiot	12	9	--	-	--	3/	--	--	1	-	--
Ionia	13	11	--	--	--	-	--	--	3/	-	-
Kent	1	--	--	--	-	3/	--	--	--	1	-
Montcalm	59	47	--	--	--	7	--	--	2	6	-
Muskegon	127	37	--	--	--	34	--	--	3/	55	--
Ottawa	1	3	--	--	--	1	--	--	--	--	--
Saginaw	7	3	--	--	--	-	--	--	1	3	--
St. Joseph	1	1	--	--	--	--	--	--	3/	3/	-
Van Buren	1	1	--	--	--	--	--	--	3/	3/	--
Unit total	581	117	--	--	--	51	--	--	14	72	--
State total	14,002	5,292	604	361	498	2,282	384	31	778	2,309	36

1/ Includes only those counties that supplied pulpwood in 1972.
2/ Oak is shown with other hardwoods in Upper Peninsula counties--the volume is not significant.
3/ Less than 50 cords.

Table 13.--*Saw log production and receipts in Michigan by species, 1969 and 1972*

(In thousand board feet, International 1/4-inch rule)

Species	Production			Receipts		
	1969	1972	Change	1969	1972	Change
Softwoods:						
Balsam fir	178	1,194	1,016	83	894	811
Cedar	2,981	8,514	5,533	2,980	8,613	5,633
Hemlock	19,160	19,014	-146	19,290	18,630	-660
Jack pine	1,575	4,536	2,961	1,535	4,022	2,487
Red pine	5,687	7,975	2,288	5,629	7,257	1,628
White pine	20,928	17,164	-3,764	19,991	15,151	-4,840
Spruce	667	819	152	568	814	246
Tamarack	5	128	123	5	128	123
All softwoods	51,181	59,344	8,163	50,081	55,509	5,428
Hardwoods:						
Ash	10,159	10,156	-3	10,158	10,003	-155
Aspen	43,138	63,694	20,556	38,483	49,489	11,006
Basswood	16,872	19,041	2,169	16,797	18,767	1,970
Beech	22,310	22,399	89	22,298	22,192	-106
Paper birch	5,112	4,967	-145	4,983	4,593	-390
Yellow birch	20,733	17,072	-3,661	20,273	16,650	-3,623
Cottonwood	9,630	8,055	-1,575	9,648	7,975	-1,673
Elm	29,015	22,367	-6,648	28,891	21,632	-7,259
Hickory	—	1,654	--	--	1,600	--
Hard maple	106,865	110,365	3,500	105,760	107,178	1,418
Soft maple	31,097	35,328	4,231	30,998	35,178	4,180
Red oak	49,864	62,074	12,210	49,863	61,552	11,689
White oak	19,633	14,014	-5,619	19,630	13,819	-5,811
Walnut	609	1,011	402	557	857	300
Other hardwoods	[1] 9,850	2,890	—	[1] 9,866	2,627	--
All hardwoods	374,887	395,087	20,200	368,205	374,112	5,907
All species	426,068	454,431	28,363	418,286	429,621	11,335

[1] Includes hickory.

Table 14.-- *Saw log production by species and State of destination, Michigan, 1972*

(In thousand board feet, International 1/4-inch rule)

ALL UNITS

SPECIES	MICHIGAN	WISCONSIN	INDIANA	OHIO	OTHER STATES	TOTAL
SOFTWOODS:						
BALSAM FIR	894	300	0	0	0	1194
CEDAR	8488	26	0	0	0	8514
HEMLOCK	18456	558	0	0	0	19014
JACK PINE	4022	514	0	0	0	4536
RED PINE	6919	1056	0	0	0	7975
WHITE PINE	14834	2330	0	0	0	17164
SPRUCE	768	51	0	0	0	819
TAMARACK	128	0	0	0	0	128
TOTAL SWDS	54509	4835	0	0	0	59344
HARDWOODS:						
ASH	9934	90	132	0	0	10156
ASPEN	49414	14248	32	0	0	63694
BASSWOOD	18716	166	159	0	0	19041
BEECH	22192	0	207	0	0	22399
MAP. BIRCH	4558	409	0	0	0	4967
YEL. BIRCH	16502	570	0	0	0	17072
COTTONWOOD	7975	0	80	0	0	8055
ROCK ELM	1996	0	0	0	0	1996
OTHER ELM	19590	781	0	0	0	20371
HICKORY	1600	0	54	0	0	1654
HARD MAPLE	106704	3115	546	0	0	110365
SOFT MAPLE	34923	123	282	0	0	35328
RED OAK	61178	120	776	0	0	62074
WHITE OAK	13687	0	327	0	0	14014
WALNUT	857	0	71	0	83	1011
OTHER SPP.	2627	45	218	0	0	2890
TOTAL HWDS	372453	19667	2934	0	83	395087
ALL SPECIES	426962	24502	2934	0	83	454431
EASTERN UPPER PENINSULA						
SOFTWOODS:						
BALSAM FIR	165	0	0	0	0	165
CEDAR	5869	0	0	0	0	5869
HEMLOCK	5357	0	0	0	0	5357
JACK PINE	3032	0	0	0	0	3032
RED PINE	2676	0	0		0	2676
WHITE PINE	6079	49	0		0	6128
SPRUCE	77	0	0	0	0	77
TAMARACK	2	0	0	0	0	2
TOTAL SWDS	23257	49	0	0	0	23306
HARDWOODS:						
ASH	157	16	0	0	0	173
ASPEN	2688	0	0	0	0	2688
BASSWOOD	1271	42	0	0	0	1313
BEECH	10778	0	0	0	0	10778
MAP. BIRCH	654	6	0	0	0	660
YEL. BIRCH	2292	86	0	0	0	2378
COTTONWOOD	0	0	0	0	0	0
ROCK ELM	200	0	0	0	0	200
OTHER ELM	3504	223	0	0	0	3727
HICKORY	0	0	0	0	0	0
HARD MAPLE	25599	346	0	0	0	25945
SOFT MAPLE	2476	0	0	0	0	2476
RED OAK	110	0	0	0	0	110
WHITE OAK	0	0	0	0	0	0
WALNUT	0	0	0	0	0	0
OTHER SPP.	1281	25	0	0	0	1306
TOTAL HWDS	51010	744	0	0	0	51754
ALL SPECIES	74267	793	0	0	0	75060

(Table 14 cont. on next page)

(Table 14 cont.)

SPECIES	MICHIGAN	WISCONSIN	INDIANA	OHIO	OTHER STATES	TOTAL
WESTERN UPPER PENINSULA						
SOFTWOODS:						
BALSAM FIR	1	300	0	0	0	301
CEDAR	526	26	0	0	0	552
HEMLOCK	12622	558	0	0	0	13180
JACK PINE	1	514	0	0	0	515
RED PINE	1503	1056	0	0	0	2559
WHITE PINE	6728	2281	0	0	0	9009
SPRUCE	666	51	0	0	0	717
TAMARACK	68	0	0	0	0	68
TOTAL SWDS	22115	4786	0	0	0	26901
HARDWOODS:						
ASH	1239	74	0	0	0	1313
ASPEN	6187	14248	0	0	0	20435
BASSWOOD	4574	124	0	0	0	4698
BEECH	1213	0	0	0	0	1213
PAP. BIRCH	1343	403	0	0	0	1746
YEL. BIRCH	14024	484	0	0	0	14508
COTTONWOOD	0	0	0	0	0	0
ROCK ELM	900	0	0	0	0	900
OTHER ELM	4309	558	0	0	0	4867
HICKORY	0	0	0	0	0	0
HARD MAPLE	52627	2769	0	0	0	55396
SOFT MAPLE	5801	123	0	0	0	5924
RED OAK	1974	120	0	0	0	2094
WHITE OAK	140	0	0	0	0	140
WALNUT	0	0	0	0	0	0
OTHER SPP.	31	20	0	0	0	51
TOTAL HWDS	94362	18923	0	0	0	113285
ALL SPECIES	116477	23709	0	0	0	140186
NORTHERN LOWER PENINSULA						
SOFTWOODS:						
BALSAM FIR	728	0	0	0	0	728
CEDAR	2086	0	0	0	0	2086
HEMLOCK	461	0	0	0	0	461
JACK PINE	989	0	0	0	0	989
RED PINE	2731	0	0	0	0	2731
WHITE PINE	1795	0	0	0	0	1795
SPRUCE	25	0	0	0	0	25
TAMARACK	58	0	0	0	0	58
TOTAL SWDS	8873	0	0	0	0	8873
HARDWOODS:						
ASH	3097	0	0	0	0	3097
ASPEN	36736	0	0	0	0	36736
BASSWOOD	7029	0	0	0	0	7029
BEECH	5109	0	0	0	0	5109
PAP. BIRCH	2258	0	0	0	0	2258
YEL. BIRCH	183	0	0	0	0	183
COTTONWOOD	3053	0	0	0	0	3053
ROCK ELM	895	0	0	0	0	895
OTHER ELM	11552	0	0	0	0	11552
HICKORY	437	0	0	0	0	437
HARD MAPLE	12939	0	0	0	0	12939
SOFT MAPLE	10708	0	0	0	0	10708
RED OAK	26861	0	0	0	0	26861
WHITE OAK	3829	0	0	0	0	3829
WALNUT	5	0	0	0	0	5
OTHER SPP.	391	0	0	0	0	391
TOTAL HWDS	125082	0	0	0	0	125082
ALL SPECIES	133955	0	0	0	0	133955

(Table 14 cont. on next page)

(Table 14 cont.) SOUTHERN LOWER PENINSULA

SPECIES	MICHIGAN	WISCONSIN	INDIANA	OHIO	OTHER STATES	TOTAL
SOFTWOODS:						
BALSAM FIR	0	0	0	0	0	0
CEDAR	7	0	0	0	0	7
HEMLOCK	16	0	0	0	0	16
JACK PINE	0	0	0	0	0	0
RED PINE	9	0	0	0	0	9
WHITE PINE	232	0	0	0	0	232
SPRUCE	0	0	0	0	0	0
TAMARACK	0	0	0	0	0	0
TOTAL SWDS	264	0	0	0	0	264
HARDWOODS:						
ASH	5441	0	132	0	0	5573
ASPEN	3803	0	32	0	0	3835
BASSWOOD	5842	0	159	0	0	6001
BEECH	5092	0	207	0	0	5299
PAP. BIRCH	303	0	0	0	0	303
YEL. BIRCH	3	0	0	0	0	3
COTTONWOOD	4922	0	80	0	0	5002
ROCK ELM	1	0	0	0	0	1
OTHER ELM	225	0	0	0	0	225
HICKORY	1163	0	54	0	0	1217
HARD MAPLE	15539	0	546	0	0	16085
SOFT MAPLE	15938	0	282	0	0	16220
RED OAK	32233	0	776	0	0	33009
WHITE OAK	9718	0	327	0	0	10045
WALNUT	852	0	71	0	83	1006
OTHER SPP.	924	0	218	0	0	1142
TOTAL HWDS	101999	0	2884	0	83	104966
ALL SPECIES	102263	0	2884	0	83	105230

Table 15.-- [illegible] by species, county, and species groups, Michigan, 1978

(In thousand board feet, International 1/4-inch rule)

Unit and county	White pine	Red and jack pine	Hemlock	Other soft-woods	White oak	Red oak	Yellow birch	Hard maple	Soft maple	Beech	Aspen	Bass-wood	Elm	Other hard-woods	All species
I. Upper Peninsula															
Alger	884	200	2,140	29	0	52	552	9,644	813	3,564	24	97	214	745	18,924
Chippewa	697	313	61	602	0	20	316	1,941	200	2,240	517	101	655	68	7,731
Delta	403	81	5	1,424	0	17	99	477	249	91	111	82	222	97	3,358
[illegible]	1,468	3,500	1,420	7	0	1	411	8,330	521	3,277	811	609	1,072	134	21,563
[illegible]	1,276	1,325	104	685	0	10	271	1,472	186	940	534	95	766	68	7,732
Menominee	915	158	1,626	3,362	0	0	318	2,200	234	164	687	271	756	355	11,046
Schoolcraft	465	131	33	4	0	10	411	1,881	273	502	4	58	242	672	4,706
Unit total	6,128	5,708	5,357	6,113	0	110	2,378	25,945	2,476	10,778	2,688	1,313	3,927	2,139	75,060
II. Upper Peninsula															
Baraga	559	136	3,487	231	15	632	4,958	12,018	1,398	0	426	688	1,020	203	25,771
Dickinson	391	124	2,321	154	0	51	342	2,185	164	82	559	739	672	681	8,465
Gogebic	1,234	529	4,473	424	0	80	2,724	8,145	895	0	6,319	1,047	1,146	838	27,854
Houghton	664	469	574	239	0	583	1,395	14,190	902	0	3,599	772	337	162	23,886
Iron	2,012	519	842	169	0	92	1,498	5,206	676	3	1,956	393	670	289	14,325
Keweenaw	808	0	0	78	0	332	399	1,459	282	0	17	50	4	118	3,547
Marquette	2,473	773	977	141	125	274	2,609	10,092	1,154	1,128	912	647	1,637	524	23,466
Ontonagon	868	524	506	202	0	50	583	2,101	453	0	6,647	362	281	295	12,872
Unit total	9,009	3,074	13,180	1,638	140	2,094	14,508	55,396	5,924	1,213	20,435	4,698	5,767	3,110	140,186
III. Lower Peninsula															
Alcona	87	87	0	106	45	175	0	2	366	5	1,273	40	37	217	2,440
Alpena	0	10	0	2,000	0	10	0	60	112	0	640	47	90	120	3,089
Antrim	20	20	50	0	0	285	66	1,543	346	267	1,783	1,136	1,746	314	7,576
Arenac	10	10	0	50	10	238	0	0	300	0	300	25	0	325	1,268
Bay	0	0	0	0	23	23	0	0	151	0	46	12	0	406	661
Benzie	0	0	0	0	0	58	0	308	132	152	420	203	271	258	1,802
Charlevoix	25	20	20	0	0	77	22	1,145	113	276	963	876	1,021	157	4,715
Cheboygan	0	0	0	38	0	127	2	347	635	92	4,052	534	1,239	1,021	8,087
Clare	27	105	0	0	288	837	0	50	49	525	764	60	25	137	2,867
Crawford	75	545	0	0	0	180	0	10	5	0	691	250	76	10	1,842
Emmet	0	0	1	0	0	284	2	533	157	199	569	334	398	104	2,581
Gladwin	0	20	0	0	29	292	0	0	536	0	1,697	70	35	608	3,287
Grand Traverse	60	30	10	0	132	357	0	822	135	637	108	207	375	121	2,994
Iosco	60	110	0	100	30	100	0	0	345	0	1,180	125	100	500	2,650
Isabella	0	116	0	5	147	203	0	233	364	50	138	166	1	188	1,611
Kalkaska	20	120	25	12	0	863	11	169	229	13	900	111	508	94	3,075
Lake	25	35	10	0	80	1,950	0	300	165	57	265	105	433	138	3,563
Leelanau	10	5	200	8	0	103	50	2,180	78	1,222	597	475	953	290	6,171
Manistee	65	40	42	0	372	1,907	0	731	500	234	195	156	859	250	5,351
Mason	65	25	12	0	70	1,603	0	278	397	61	81	141	319	140	3,192
Mecosta	0	25	0	0	0	125	0	50	25	0	0	25	0	25	275
Midland	0	0	0	0	41	129	0	50	618	0	578	23	0	954	2,393
Missaukee	10	35	0	58	0	1,228	0	282	240	0	614	116	423	124	3,130
Montmorency	63	287	0	38	50	890	0	159	212	67	3,277	235	714	287	6,279
Newaygo	101	0	8	0	449	4,429	2	126	562	37	1,347	19	37	194	7,311
Oceana	168	35	45	0	1,530	3,308	10	1,447	1,164	525	87	410	433	438	9,600
Ogemaw	20	240	0	0	5	906	0	0	440	0	3,466	215	20	525	5,837
Osceola	42	60	7	5	33	995	0	978	840	464	1,436	289	79	255	5,483
Oscoda	139	729	0	0	50	1,790	0	56	108	3	3,250	56	438	226	6,845
Otsego	56	156	18	2	0	168	18	513	211	122	1,424	380	1,089	415	4,572
Presque Isle	60	158	0	475	0	17	0	135	370	33	1,418	111	312	163	3,252
Roscommon	262	492	0	0	135	2,354	0	20	422	0	2,913	0	99	196	6,893
Wexford	325	205	13	0	310	850	0	412	381	68	264	77	317	41	3,263
Unit total	1,795	3,720	461	2,897	3,829	26,861	183	12,939	10,708	5,109	36,736	7,029	12,447	9,241	133,955

(Table 15 cont. on next page)

(Table 15 cont.)

Unit and county	White pine	Red and jack pine	Hemlock	Other soft-woods	White oak	Red oak	Yellow birch	Hard maple	Soft maple	Beech	Aspen	Bass-wood	Elm	Other hard-woods	All species
S. Lower Peninsula															
Allegan	0	4	0	0	221	934	0	406	126	182	20	33	0	334	2,260
Barry	0	0	0	0	647	2,988	0	997	703	589	76	392	1	815	7,208
Berrien	0	0	0	0	49	65	0	236	76	218	0	122	0	194	960
Branch	0	0	0	0	293	495	0	129	239	79	5	116	0	266	1,622
Calhoun	0	0	0	0	189	478	0	194	245	71	0	56	0	117	1,350
Cass	26	0	0	7	137	304	0	266	103	257	15	88	2	758	1,963
Clinton	0	0	0	0	488	1,874	0	1,327	669	327	0	297	0	565	5,547
Eaton	0	0	0	0	517	1,489	0	996	448	228	0	330	0	467	4,475
Genessee	0	0	0	0	63	1,387	0	342	729	151	0	192	0	342	3,206
Gratiot	0	0	0	0	211	1,657	0	545	812	91	86	207	0	207	3,816
Hillsdale	0	0	0	0	266	365	0	649	435	75	0	105	0	194	2,089
Huron	0	0	0	0	91	421	0	525	911	90	571	377	0	1,543	4,529
Ingham	0	0	0	0	413	1,375	0	879	1,149	195	0	408	1	546	4,966
Ionia	0	0	0	0	1,172	2,651	0	1,719	1,572	713	81	678	0	1,540	10,126
Jackson	0	0	0	0	420	816	0	565	786	61	0	169	0	359	3,176
Kalamazoo	0	0	0	0	154	803	0	449	226	25	66	37	0	43	1,803
Kent	37	3	9	0	560	2,523	2	1,524	969	900	73	483	5	917	8,005
Lapeer	13	0	0	0	402	729	0	266	519	74	100	88	0	492	2,683
Lenawee	0	0	0	0	273	405	0	452	333	85	33	165	0	226	1,972
Livingston	0	0	0	0	343	746	0	488	340	67	0	198	0	217	2,399
Macomb	0	0	0	0	50	50	0	50	100	25	0	25	0	50	350
Monroe	0	0	0	0	91	223	0	157	91	0	33	58	0	65	718
Montcalm	87	0	0	0	461	1,026	0	606	728	78	652	200	0	464	4,302
Muskegon	59	2	7	0	279	1,820	1	111	224	81	155	10	0	92	2,841
Oakland	0	0	0	0	312	526	0	151	115	2	82	55	0	56	1,299
Ottawa	5	0	0	0	149	1,032	0	32	116	33	46	5	0	64	1,482
Saginaw	0	0	0	0	434	2,007	0	625	978	92	10	400	0	859	5,405
St. Clair	0	0	0	0	433	841	0	345	670	112	0	178	0	368	2,947
St. Joseph	0	0	0	0	251	577	0	73	103	111	19	55	0	280	1,469
Sanilac	0	0	0	0	100	133	0	38	258	7	333	25	0	540	1,434
Shiawassee	0	0	0	0	71	116	0	132	106	26	0	53	0	87	591
Tuscola	5	0	0	0	121	1,554	0	497	981	121	1,334	265	0	863	5,746
Van Buren	0	0	0	0	104	149	0	192	230	113	40	27	0	208	1,063
Washtenaw	0	0	0	0	280	450	0	122	130	20	0	104	5	101	1,212
Wayne	0	0	0	0	0	0	0	0	0	0	0	0	212	4	216
Unit total	232	9	16	7	10,045	33,009	3	16,085	16,220	5,299	3,835	6,001	226	14,243	105,230
State total	17,164	12,511	19,014	10,655	14,014	62,074	17,072	110,365	35,328	22,399	63,694	19,041	22,367	28,733	454,431

Table 16.--*Saw log receipts in Michigan by species and State of origin, 1972*
(In thousand board feet, International 1/4-inch rule)

Species	All States	Michigan	Wisconsin	Indiana
STATE TOTAL				
Softwoods:				
Balsam Fir	894	894	0	0
Cedar	8,613	8,488	125	0
Hemlock	18,630	18,456	174	0
Jack Pine	4,022	4,022	0	0
Red Pine	7,257	6,919	338	0
White Pine	15,151	14,834	317	0
Spruce	814	768	46	0
Tamarack	128	128	0	0
Total Softwoods	55,509	54,509	1,000	0
Hardwoods:				
Ash	10,003	9,934	12	57
Aspen	49,489	49,414	75	0
Basswood	18,767	18,716	25	26
Beech	22,192	22,192	0	0
Paper Birch	4,593	4,558	35	0
Yellow Birch	16,650	16,502	148	0
Cottonwood	7,975	7,975	0	0
Rock Elm	1,996	1,996	0	0
Other Elm	19,636	19,590	46	0
Hickory	1,600	1,600	0	0
Hard Maple	107,178	106,704	342	132
Soft Maple	35,178	34,923	123	132
Red Oak	61,552	61,178	110	264
White Oak	13,819	13,687	0	132
Walnut	857	857	0	0
Other Species	2,627	2,627	0	0
Total Hardwoods	374,112	372,453	916	743
All species	429,621	426,962	1,916	743
EASTERN UPPER PENINSULA				
Softwoods:				
Balsam Fir	62	62	0	0
Cedar	5,704	5,579	125	0
Hemlock	5,354	5,354	0	0
Jack Pine	3,032	3,032	0	0
Red Pine	2,825	2,789	36	0
White Pine	6,529	6,529	0	0
Spruce	82	82	0	0
Tamarack	3	3	0	0
Total Softwoods	23,591	23,430	161	0
Hardwoods:				
Ash	157	157	0	0
Aspen	2,674	2,599	75	0
Basswood	1,431	1,406	25	0
Beech	8,784	8,784	0	0
Paper Birch	1,044	1,009	35	0
Yellow Birch	2,107	2,107	0	0
Rock Elm	400	400	0	0
Other Elm	3,390	3,390	0	0
Hard Maple	25,773	25,698	75	0
Soft Maple	2,603	2,603	0	0
Red Oak	222	197	25	0
Other Species	1,274	1,274	0	0
Total Hardwoods	49,859	49,624	235	0
All Species	73,450	73,054	396	0

(Table 16 cont. on next page)

(Table 16 cont.) WESTERN UPPER PENINSULA

Species	All States	Michigan	Wisconsin
Softwoods:			
Balsam Fir	1	1	0
Cedar	466	466	0
Hemlock	12,787	12,613	174
Jack Pine	1	1	0
Red Pine	1,692	1,390	302
White Pine	6,534	6,217	317
Spruce	707	661	46
Tamarack	67	67	0
Total Softwoods	22,255	21,416	839
Hardwoods:			
Ash	1,247	1,235	12
Aspen	6,135	6,135	0
Basswood	4,382	4,382	0
Beech	2,967	2,967	0
Paper Birch	953	953	0
Yellow Birch	14,310	14,162	148
Rock Elm	700	700	0
Other Elm	4,169	4,123	46
Hard Maple	51,934	51,667	267
Soft Maple	5,596	5,473	123
Red Oak	1,962	1,877	85
White Oak	140	140	0
Other Species	29	29	0
Total Hardwoods	94,524	93,843	681
All Species	116,779	115,259	1,520

NORTHERN LOWER PENINSULA

Softwoods:			
Balsam Fir	831	831	0
Cedar	2,436	2,436	0
Hemlock	470	470	0
Jack Pine	989	989	0
Red Pine	2,731	2,731	0
White Pine	1,892	1,892	0
Spruce	25	25	0
Tamarack	58	58	0
Total Softwoods	9,432	9,432	0
Hardwoods:			
Ash	2,889	2,889	0
Aspen	36,625	36,625	0
Basswood	7,030	7,030	0
Beech	4,796	4,796	0
Paper Birch	2,291	2,291	0
Yellow Birch	223	223	0
Cottonwood	2,915	2,915	0
Rock Elm	838	838	0
Other Elm	11,771	11,771	0
Hickory	427	427	0
Hard Maple	13,191	13,191	0
Soft Maple	10,449	10,449	0
Red Oak	25,824	25,824	0
White Oak	3,410	3,410	0
Walnut	5	5	0
Other Species	367	367	0
Total Hardwoods	123,051	123,051	0
All Species	132,483	132,483	0

(Table 16 cont. on next page)

(Table 16 cont.) SOUTHERN LOWER PENINSULA

Species	All States	Michigan	Indiana
Softwoods:			
Cedar	7	7	0
Hemlock	19	19	0
Red Pine	9	9	0
White Pine	196	196	0
Total Softwoods	231	231	0
Hardwoods:			
Ash	5,710	5,653	57
Aspen	4,055	4,055	0
Basswood	5,924	5,898	26
Beech	5,645	5,645	0
Paper Birch	305	305	0
Yellow Birch	10	10	0
Cottonwood	5,060	5,060	0
Rock Elm	58	58	0
Other Elm	306	306	0
Hickory	1,173	1,173	0
Hard Maple	16,280	16,148	132
Soft Maple	16,530	16,398	132
Red Oak	33,544	33,280	264
White Oak	10,269	10,137	132
Walnut	852	852	0
Other Species	957	957	0
Total Hardwoods	106,678	105,935	743
All species	106,909	106,166	743

Table 17.--*Veneer-log production*[1] *in Michigan for selected years, 1964-1972*
(In thousand board feet)[2]

Year	Standard veneer logs 3/	Container veneer logs	Total
1946	49,451	29,407	78,858
1948	43,483	34,201	77,684
1950	21,237	32,331	53,568
1952	19,106	21,113	40,219
1954	17,705	16,794	34,499
1956	20,030	19,625	39,655
1958	15,094	4,864	19,958
1960	15,608	2,879	18,487
1962	14,523	2,315	16,838
1963	13,781	1,519	15,300
1965	19,714	2,653	22,367
1966	19,196	2,746	21,942
1968	16,873	2,460	19,333
1970	12,782	2,257	15,039
1972	16,828	1,651	18,479

1/ Does not include Michigan veneer logs used by Iron Wood Products Company.
2/ International 1/4-inch rule.
3/ Face, core, and specialty veneer logs.

Table 18.--*Veneer-log production and receipts*[1] *by species in Michigan, 1968 and 1972*
(In thousand board feet)

Species	Production			Receipts		
	1968	1972	Change	1968	1972	Change
Ash	383	241	-142	352	128	-224
Aspen	220	252	32	173	214	41
Basswood	714	649	-65	491	306	-185
Beech	453	1,018	565	374	178	-196
Paper birch	1,503	823	-680	1,890	1,018	-872
Yellow birch	6,149	4,318	-1,831	2,186	1,188	-998
Cottonwood	439	570	131	497	570	73
Elm	1,212	939	-273	589	155	-434
Hickory	193	86	-107	354	4	-350
Hard maple	5,336	7,121	1,785	1,571	1,227	-344
Soft maple	255	329	74	183	205	22
Red oak	850	1,327	477	392	109	-283
White oak	309	92	-217	3	--	-3
Walnut	585	624	39	7	--	-7
Other species	732	90	-642	511	22	-489
All species	19,333	18,479	-854	9,573	5,324	-4,249

1/ Does not include veneer logs used by Iron Wood Products Company.
2/ International 1/4-inch rule.

Table 19.--*Veneer-log receipts*[1] *in Michigan for selected years, 1946-1972*
(In thousand board feet)[2]

Year	Standard veneer logs[3]	Container veneer logs	Total
1946	24,667	21,388	46,055
1948	26,383	27,516	53,899
1950	12,907	24,497	37,404
1952	14,364	14,183	28,547
1954	12,337	9,535	21,872
1956	10,838	12,726	23,564
1958	7,843	4,754	12,597
1960	9,339	2,736	12,075
1962	5,787	2,122	7,909
1963	6,134	1,464	7,598
1965	9,717	2,711	12,428
1966	10,036	2,746	12,782
1968	7,055	2,518	9,573
1970	4,472	2,257	6,729
1972	3,717	1,607	5,324

1/ Does not include veneer logs used by Iron Wood Products Corp.
2/ International 1/4-inch rule.
3/ Includes face, core, and specialty veneer logs.

Table 20.--*Veneer-log and bolt production*[1] *by species and State or country of destination, Michigan, 1972*
(In thousand board feet)[2]

Species	Destination							Total
	Michigan	Wisconsin	Indiana	Ohio	Kentucky	Other states	Canada	
Softwoods:								
Balsam fir	--	--	--	--	--	--	--	--
Cedar	--	--	--	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--
Jack pine	--	--	--	--	--	--	--	--
Red pine	--	--	--	--	--	--	--	--
White pine	--	3	--	--	--	--	--	3
Spruce	--	--	--	--	--	--	--	--
Tamarack	--	--	--	--	--	--	--	--
Total softwoods	--	3	--	--	--	--	--	3
Hardwoods:								
Ash	128	107	1	3	2	--	--	241
Aspen	214	38	--	--	--	--	--	252
Basswood	306	318	23	2	--	--	--	649
Beech	178	493	--	3	--	--	344	1,018
Paper birch	798	25	--	--	--	--	--	823
Yellow birch	704	3,479	13	--	--	--	122	4,318
Cottonwood	570	--	--	--	--	--	--	570
Rock elm	5	--	--	--	--	--	--	5
Other elm	139	794	1	--	--	--	--	934
Hickory	4	--	30	1	48	--	3	86
Hard maple	1,183	4,681	778	393	74	12	--	7,121
Soft maple	205	106	--	18	--	--	--	329
Red oak	109	816	266	10	126	--	--	1,327
White oak	--	2	62	17	11	--	--	92
Walnut	--	--	267	220	119	8	10	624
Other species	22	31	27	2	5	--	--	87
Total hardwoods	4,565	10,890	1,468	669	385	20	479	18,476
All species	4,565	10,893	1,468	669	385	20	479	18,479

1/ Does not include Michigan logs used by Iron Wood Products Corp.
2/ International 1/4-inch rule.

Table 21.--*Veneer-log production by unit, county, and species groups, Michigan, 1972*

(In thousand board feet, International 1/4-inch rule)

Unit and county	White pine	Red and jack pine	Hemlock	Other soft-woods	White oak	Red oak	Yellow birch	Hard maple	Soft maple	Beech	Aspen	Bass-wood	Elm	Other hard-woods	All species
E. Upper Peninsula															
Alger	0	0	0	0	0	11	708	641	0	278	0	13	69	67	1,787
Chippewa	0	0	0	0	0	6	108	100	0	37	22	15	72	56	416
Delta	0	0	0	0	0	4	268	243	5	120	11	51	55	560	1,317
Luce	0	0	0	0	0	6	550	382	0	161	22	13	61	18	1,213
Mackinac	0	0	0	0	0	6	109	80	0	46	33	3	28	23	328
Menominee	0	0	0	0	0	0	73	77	0	26	0	2	36	51	265
Schoolcraft	0	0	0	0	0	20	328	259	17	169	0	16	40	61	910
Unit total	0	0	0	0	0	53	2,144	1,782	22	837	88	113	361	836	6,236
W. Upper Peninsula															
Baraga	3	0	0	0	0	26	346	745	19	0	0	70	68	25	1,302
Dickinson	0	0	0	0	0	14	80	171	0	0	10	6	45	3	329
Gogebic	0	0	0	0	0	18	346	452	15	0	18	66	88	67	1,070
Houghton	0	0	0	0	0	159	217	613	14	0	0	21	36	2	1,062
Iron	0	0	0	0	2	9	256	405	22	0	1	40	76	13	824
Keweenaw	0	0	0	0	0	226	296	351	7	0	0	10	5	8	903
Marquette	0	0	0	0	0	303	475	556	7	0	0	32	188	20	1,581
Ontonagon	0	0	0	0	0	6	144	442	0	0	8	12	49	5	666
Unit total	3	0	0	0	2	761	2,160	3,735	84	0	37	257	555	143	7,737
N. Lower Peninsula															
Alcona	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpena	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Antrim	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Arenac	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bay	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Benzie	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Charlevoix	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cheboygan	0	0	0	0	0	0	0	130	0	0	0	0	0	0	130
Clare	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crawford	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Emmet	0	0	0	0	0	0	0	81	0	46	26	76	0	0	229
Gladwin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Traverse	0	0	0	0	0	21	0	23	0	0	0	0	0	11	55
Iosco	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Isabella	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kalkaska	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lake	0	0	0	0	0	25	0	0	25	0	25	26	0	50	151
Leelanau	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manistee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mason	0	0	0	0	0	25	0	18	0	0	0	0	0	0	43
Mecosta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Midland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Missaukee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Montmorency	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Newaygo	0	0	0	0	0	25	0	0	25	0	25	26	0	50	151
Oceana	0	0	0	0	0	50	0	0	100	0	51	101	0	100	402
Ogemaw	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Osceola	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oscoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Otsego	0	0	0	0	0	16	0	25	0	0	0	0	0	0	41
Presque Isle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roscommon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wexford	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unit total	0	0	0	0	0	162	0	277	150	46	127	229	0	211	1,202

(Table 21 cont. on next page)

(Table 21 cont.)

Unit and county	White pine	Red and jack pine	Hemlock	Other soft-woods	White oak	Red oak	Yellow birch	Hard maple	Soft maple	Beech	Aspen	Bass-wood	Elm	Other hard-woods	All species
S. Lower Peninsula															
Allegan	0	0	0	0	11	16	0	170	0	0	0	3	3	223	426
Barry	0	0	0	0	19	54	0	200	0	0	0	0	0	157	430
Berrien	0	0	0	0	15	41	0	28	0	0	0	7	2	181	274
Branch	0	0	0	0	7	0	0	28	0	0	0	0	0	18	53
Calhoun	0	0	0	0	0	22	0	52	0	0	0	5	0	44	123
Cass	0	0	0	0	14	57	0	65	0	0	0	5	0	116	257
Clinton	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eaton	0	0	0	0	2	0	0	68	0	0	0	0	0	27	97
Genessee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gratiot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hillsdale	0	0	0	0	0	19	7	39	0	0	0	4	0	6	75
Huron	0	0	0	0	0	0	0	12	0	0	0	0	0	0	12
Ingham	0	0	0	0	0	0	7	8	0	0	0	0	0	8	23
Ionia	0	0	0	0	1	6	0	151	0	0	0	0	0	19	177
Jackson	0	0	0	0	6	35	0	37	0	0	0	4	0	23	105
Kalamazoo	0	0	0	0	0	0	0	51	0	0	0	0	0	33	84
Kent	0	0	0	0	0	8	0	120	0	0	0	0	0	61	189
Lapeer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lenawee	0	0	0	0	4	17	0	18	18	3	0	2	0	33	95
Livingston	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Macomb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monroe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Montcalm	0	0	0	0	0	0	0	59	0	0	0	0	0	22	81
Muskegon	0	0	0	0	0	0	0	74	0	0	0	0	0	38	112
Oakland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ottawa	0	0	0	0	0	0	0	29	0	0	0	0	0	8	37
Saginaw	0	0	0	0	9	17	0	9	0	0	0	0	0	5	40
St. Clair	0	0	0	0	0	0	0	0	0	0	0	0	0	13	13
St. Joseph	0	0	0	0	0	0	0	17	0	0	0	0	0	20	37
Sanilac	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shiawassee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuscola	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Van Buren	0	0	0	0	2	49	0	91	55	132	0	20	18	181	548
Washtenaw	0	0	0	0	0	10	0	1	0	0	0	0	0	0	11
Wayne	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5
Unit total	0	0	0	0	90	351	14	1,327	73	135	0	50	23	1,241	3,304
State Total	3	0	0	0	92	1,327	4,318	7,121	329	1,018	252	649	939	2,431	18,479

[1]Does not include Michigan logs used by Iron Wood Products Company.

Table 22.--*Veneer-log and bolt receipts*[1] *in Michigan by species and State or country of origin, 1972*
(In thousand board feet)[2]

Species	All states	Michigan	Wisconsin	Minnesota	Canada
Hardwoods:					
Ash	128	128	—	—	--
Aspen	214	214	--	--	--
Basswood	306	306	--	--	--
Beech	178	178	--	—	--
Paper birch	1,018	798	44	22	154
Yellow birch	1,188	704	11	11	462
Cottonwood	570	570	—	--	—
Rock elm	5	5	--	—	--
Other elm	150	139	11	—	--
Hickory	4	4	--	--	--
Hard maple	1,227	1,183	—	—	44
Soft maple	205	205	—	--	--
Red oak	109	109	--	--	--
Other species	22	22	--	--	--
All species	5,324	4,565	66	33	660

1/ Does not include veneer logs used by Iron Wood Products Corp.
2/ International 1/4-inch rule.

Table 23.--*Piling production by county, unit, and species, Michigan, 1972*
(In thousand linear feet)

Unit and county	Hickory	Hard maple	Soft maple	Red oak	White oak
Southern Lower Peninsula:					
Lapeer	1	1	1	3	5
Macomb	1	1	1	2	5
Saginaw	--	--	--	--	6
St. Clair	1	1	3	10	15
Tuscola	--	--	--	--	6
Unit total	3	3	5	15	37

Table 24.-- *Cabin log production by county, unit, and species, Michigan, 1972*
(In thousand board feet)[1]

Unit and county	Cedar	Jack pine	Red pine	White pine	Spruce
Eastern Upper Peninsula:					
Chippewa	250	--	--	--	--
Unit total	250	--	--	--	--
Western Upper Peninsula:					
Dickinson	58	--	--	—	1
Unit total	58	--	--	--	1
Northern Lower Peninsula:					
Antrim	50	--	25	--	--
Cheboygan	150	70	30	--	--
Iosco	--	--	40	40	--
Presque Isle	--	70	30	--	--
Unit total	200	140	125	40	--
State total	508	140	125	40	1

1/ International 1/4-inch rule.

Unit and county	Balsam fir	Cedar
Eastern Upper Peninsula:		
Alger	--	121
Chippewa	--	50
Delta	--	648
Luce	--	50
Mackinac	--	50
Menominee	--	1,355
Schoolcraft	--	122
Unit total	--	2,396
Western Upper Peninsula:		
Dickinson	--	130
Keweenaw	--	50
Marquette	--	120
Unit total	--	300
Northern Lower Peninsula:		
Alcona	--	1
Alpena	40	110
Charlevoix	--	10
Cheboygan	--	8
Isabella	--	5
Kalkaska	--	5
Montmorency	--	7
Presque Isle	10	60
Roscommon	--	10
Unit total	50	216
State total	50	2,912

Table 25.-- *Post production by county, unit, and species, Michigan, 1972*
(In thousand pieces)

Unit and county	Balsam fir	Cedar	Red pine
Eastern Upper Peninsula:			
Alger	--	--	2,500
Chippewa	4,875	--	--
Delta	--	5,833	--
Luce	--	--	2,000
Menominee	--	10,200	--
Schoolcraft	--	--	1,000
Unit total	4,875	16,033	5,500
Western Upper Peninsula:			
Baraga	--	--	300
Marquette	--	167	--
Unit total	--	167	300
Northern Lower Peninsula:			
Alcona	--	278	--
Antrim	3,875	--	--
Cheboygan	3,875	--	--
Montmorency	--	--	4,000
Unit total	7,750	278	4,000
Southern Lower Peninsula:			
Allegan	--	--	10,000
Montcalm	--	--	15,000
Unit total	--	--	25,000
State total	12,625	16,478	34,800

Table 26.--*Pole production by county, unit, and species, Michigan, 1972*
(In pieces)

Table 27.--*Volume of residue produced at Michigan primary wood-using mills by kind of material, type of use, county, and unit, 1972*
(In thousand cubic feet)

EASTERN UPPER PENINSULA

COUNTY OR UNIT AND TYPE OF USE	WOOD RESIDUE							
	TOTAL		COARSE 1/		FINE 2/		BARK 3/	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
ALGER								
SOLD	54.6	1391.1	54.6	1363.9	0	27.2	0	0
USED WITHIN PLANT	14.9	299.9	0	0	14.9	299.9	28.9	526.0
ALL OTHER DISPOSAL 4/	12.2	278.5	4.1	57.5	8.1	221.0	24.8	305.6
TOTAL	81.7	1969.5	58.7	1421.4	23.0	548.1	53.7	831.6
CHIPPEWA								
SOLD	5.3	30.7	5.3	30.7	0	0	3.0	.5
USED WITHIN PLANT	.2	126.7	0	30.0	.2	96.7	0	66.5
ALL OTHER DISPOSAL 4/	47.5	13.2	28.2	8.1	19.3	5.1	17.8	5.3
TOTAL	53.0	170.6	33.5	68.8	19.5	101.8	20.8	72.3
DELTA								
SOLD	8.3	46.6	8.2	46.6	.1	0	0	0
USED WITHIN PLANT	22.3	1.5	15.3	.9	7.0	.6	2.3	.6
ALL OTHER DISPOSAL 4/	69.0	102.9	39.4	37.0	29.6	65.9	163.3	61.1
TOTAL	99.6	151.0	62.9	84.5	36.7	66.5	165.6	61.7
LUCE								
SOLD	405.9	475.5	397.5	442.8	8.4	32.7	0	0
USED WITHIN PLANT	8.4	32.7	0	0	8.4	32.7	18.6	68.3
ALL OTHER DISPOSAL 4/	137.0	152.2	0	0	137.0	152.2	238.1	196.9
TOTAL	551.3	660.4	397.5	442.8	153.8	217.6	256.7	265.2
MACKINAC								
SOLD	71.3	65.4	71.3	64.3	0	1.1	0	0
USED WITHIN PLANT	0	.9	0	.9	0	0	0	.6
ALL OTHER DISPOSAL 4/	57.6	39.2	10.1	1.4	47.5	37.8	55.4	39.8
TOTAL	128.9	105.5	81.4	66.6	47.5	38.9	55.4	40.4
MENOMINEE								
SOLD	376.2	207.5	376.2	207.5	0	0	0	0
USED WITHIN PLANT	4.3	64.3	2.7	40.6	1.6	23.7	1.7	26.2
ALL OTHER DISPOSAL 4/	351.1	294.1	83.2	109.4	267.9	184.9	368.9	201.9
TOTAL	731.6	566.1	462.1	357.5	269.5	208.6	370.6	228.1
SCHOOLCRAFT								
SOLD	18.4	28.4	18.0	28.4	0	0	0	0
ALL OTHER DISPOSAL 4/	10.5	16.5	0	0	10.5	16.5	11.7	17.6
TOTAL	28.9	44.9	18.0	28.4	10.5	16.5	11.7	17.6

(TABLE 27 CONT. ON NEXT PAGE)

(TABLE 27 CONT.)

EASTERN UPPER PENINSULA

COUNTY OR UNIT AND TYPE OF USE	WOOD RESIDUE						BARK 3/	
	TOTAL		COARSE 1/		FINE 2/			
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
ALL COUNTIES E. UPPER PENINSULA								
SOLD	939.6	2245.2	931.1	2184.2	8.5	61.0	3.0	.5
USED WITHIN PLANT	50.1	526.0	18.0	72.4	32.1	453.6	51.5	688.2
ALL OTHER DISPOSAL 4/	684.9	896.8	165.0	213.4	519.9	683.4	880.0	828.2
TOTAL	1674.6	3668.0	1114.1	2470.0	560.5	1198.0	934.5	1516.9
W. UPPER PENINSULA								
BARAGA								
SOLD	62.1	830.5	62.1	752.6	0	77.9	0	0
USED WITHIN PLANT	.4	3.3	.1	1.1	.3	2.2	.1	.5
ALL OTHER DISPOSAL 4/	43.9	311.7	5.3	0	38.6	311.7	42.2	486.2
TOTAL	106.4	1145.5	67.5	753.7	38.9	391.8	42.3	486.7
DICKINSON								
USED WITHIN PLANT	4.9	55.1	3.2	34.8	1.7	20.3	.4	22.5
ALL OTHER DISPOSAL 4/	9.6	0	6.0	0	3.6	0	5.2	0
TOTAL	14.5	55.1	9.2	34.8	5.3	20.3	5.6	22.5
GOGEBIC								
SOLD	676.0	1881.9	618.8	1729.6	57.2	152.3	7.3	24.0
USED WITHIN PLANT	291.0	698.0	116.8	378.8	174.2	319.2	352.4	817.5
ALL OTHER DISPOSAL 4/	67.2	772.1	0	0	67.2	772.1	123.9	673.9
TOTAL	1034.2	3352.0	735.6	2108.4	298.6	1243.6	483.6	1515.4
HOUGHTON								
SOLD	47.6	902.6	47.6	902.6	0	0	0	0
USED WITHIN PLANT	8.5	76.3	5.4	48.2	3.1	28.1	3.5	31.1
ALL OTHER DISPOSAL 4/	24.2	419.1	.6	8.7	23.6	410.4	29.5	588.5
TOTAL	80.3	1398.0	53.6	959.5	26.7	438.5	33.0	619.6
IRON								
SOLD	.6	157.0	.6	107.1	0	49.9	.3	4.2
ALL OTHER DISPOSAL 4/	.4	33.7	0	13.4	.4	20.3	0	73.6
TOTAL	1.0	190.7	.6	120.5	.4	70.2	.3	77.8
KEWEENAW								
SOLD	49.5	128.3	49.5	128.3	0	0	0	0
ALL OTHER DISPOSAL 4/	18.7	46.1	1.4	1.8	17.3	44.3	36.0	84.0
TOTAL	68.2	174.4	50.9	130.1	17.3	44.3	36.0	84.0
MARQUETTE								
SOLD	174.7	919.3	174.7	818.3	0	101.0	0	12.7
ALL OTHER DISPOSAL 4/	118.8	307.5	15.1	.5	103.7	307.0	122.5	502.9
TOTAL	293.5	1226.8	189.8	818.8	103.7	408.0	122.5	515.6

(TABLE 27 CONT. ON NEXT PAGE)

(TABLE 27 CONT.) WESTERN UPPER PENINSULA

COUNTY OR UNIT AND TYPE OF USE	WOOD RESIDUE							
	TOTAL		COARSE 1/		FINE 2/		BARK 3/	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
ALL COUNTIES W. UPPER PENINSULA								
SOLD	1010.5	4819.6	953.3	4438.5	57.2	381.1	7.6	40.9
USED WITHIN PLANT	304.8	832.7	125.5	462.9	179.3	369.8	356.4	871.6
ALL OTHER DISPOSAL 4/	282.8	1890.2	28.4	24.4	254.4	1865.8	359.3	2409.1
TOTAL	1598.1	7542.5	1107.2	4925.8	490.9	2616.7	723.3	3321.6
N. LOWER PENINSULA								
ALCONA								
SOLD	0	4.8	0	4.8	0	0	0	3.1
ALL OTHER DISPOSAL 4/	19.8	55.2	12.5	33.1	7.3	22.1	6.7	21.3
TOTAL	19.8	60.0	12.5	37.9	7.3	22.1	6.7	24.4
ALPENA								
SOLD	0	16.8	0	0	0	16.8	0	0
ALL OTHER DISPOSAL 4/	152.0	74.4	96.0	57.6	56.0	16.8	45.0	37.2
TOTAL	152.0	91.2	96.0	57.6	56.0	33.6	45.0	37.2
ANTRIM								
SOLD	0	228.2	0	228.2	0	0	1.3	0
USED WITHIN PLANT	2.0	66.6	0	0	2.0	66.6	0	0
ALL OTHER DISPOSAL 4/	8.7	263.6	6.7	132.0	2.0	131.6	5.6	231.0
TOTAL	10.7	558.4	6.7	360.2	4.0	198.2	6.9	231.0
ARENAC								
SOLD	.8	205.2	.5	129.6	.3	75.6	1.6	14.5
USED WITHIN PLANT	1.6	0	1.6	0	0	0	.3	.1
ALL OTHER DISPOSAL 4/	8.8	22.8	4.3	14.4	2.5	8.4	4.0	79.1
TOTAL	11.2	228.0	8.4	144.0	2.8	84.0	5.9	93.7
BAY								
SOLD	.1	7.8	0	3.6	.1	4.2	0	0
ALL OTHER DISPOSAL 4/	.2	3.6	.2	3.6	0	0	.2	4.6
TOTAL	.3	11.4	.2	7.2	.1	4.2	.2	4.6
BENZIE								
SOLD	7.3	120.8	4.8	79.2	2.5	41.6	0	0
ALL OTHER DISPOSAL 4/	.3	50.2	0	28.8	.3	21.4	3.1	66.5
TOTAL	7.6	171.0	4.8	108.0	2.8	63.0	3.1	66.5
CHARLEVOIX								
ALL OTHER DISPOSAL 4/	3.8	377.6	2.4	238.5	1.4	139.1	19.6	148.0
TOTAL	3.8	377.6	2.4	238.5	1.4	139.1	19.6	148.0

(TABLE 27 CONT. ON NEXT PAGE)

(TABLE 27 CONT.)

NORTHERN LOWER PENINSULA

COUNTY OR UNIT AND TYPE OF USE	WOOD RESIDUE							
	TOTAL		COARSE 1/		FINE 2/		BARK 3/	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
CHEBOYGAN								
SOLD	5.7	420.2	5.7	378.2	0	42.0	3.7	144.7
ALL OTHER DISPOSAL 4/	3.3	328.8	0	94.8	3.3	234.0	6.2	159.5
TOTAL	9.0	749.0	5.7	473.0	3.3	276.0	9.9	304.2
CLARE								
SOLD	4.0	85.6	3.8	69.2	.2	16.4	.1	14.0
ALL OTHER DISPOSAL 4/	2.0	60.5	0	23.1	2.0	37.4	2.1	45.6
TOTAL	6.0	146.1	3.8	92.3	2.2	53.8	2.2	59.6
CRAWFORD								
SOLD	12.5	49.9	12.5	49.9	0	0	0	0
USED WITHIN PLANT	3.6	1.2	3.6	1.2	0	0	1.9	6.2
ALL OTHER DISPOSAL 4/	27.3	46.9	11.3	10.8	16.0	36.1	15.8	33.8
TOTAL	43.4	98.0	27.4	61.9	16.0	36.1	17.7	40.0
EMMET								
SOLD	0	41.3	0	41.3	0	0	0	9.7
USED WITHIN PLANT	0	40.8	0	1.4	0	39.4	0	15.1
ALL OTHER DISPOSAL 4/	0	19.4	0	3.8	0	15.6	0	17.5
TOTAL	0	101.5	0	46.5	0	55.0	0	42.3
GLADWIN								
ALL OTHER DISPOSAL 4/	1.6	13.6	1.0	8.6	.6	5.0	.6	5.6
TOTAL	1.6	13.6	1.0	8.6	.6	5.0	.6	5.6
GRAND TRAVERSE								
SOLD	6.8	119.4	4.3	75.4	2.5	44.0	.1	2.4
ALL OTHER DISPOSAL 4/	0	0	0	0	0	0	2.7	45.0
TOTAL	6.8	119.4	4.3	75.4	2.5	44.0	2.8	47.4
IOSCO								
SOLD	0	134.1	0	84.7	0	49.4	0	15.5
ALL OTHER DISPOSAL 4/	11.4	42.6	7.2	26.9	4.2	15.7	7.2	56.6
TOTAL	11.4	176.7	7.2	111.6	4.2	65.1	7.2	72.1
ISABELLA								
SOLD	51.5	285.8	32.5	179.5	19.0	106.3	19.8	82.1
ALL OTHER DISPOSAL 4/	0	2.6	0	2.6	0	0	1.0	32.6
TOTAL	51.5	288.4	32.5	182.1	19.0	106.3	20.8	114.7

(TABLE 27 CONT. ON NEXT PAGE)

(TABLE 27 CONT.) NORTHERN LOWER PENINSULA

COUNTY OR UNIT AND TYPE OF USE	WOOD RESIDUE							
	TOTAL		COARSE 1/		FINE 2/		BARK 3/	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
KALKASKA								
SOLD	0	170.5	0	132.0	0	38.5	0	45.5
ALL OTHER DISPOSAL 4/	6.2	45.8	3.9	4.6	2.3	41.2	2.4	42.6
TOTAL	6.2	216.3	3.9	136.6	2.3	79.7	2.4	88.1
LAKE								
SOLD	5.7	130.2	3.6	100.8	2.1	29.4	0	0
ALL OTHER DISPOSAL 4/	5.7	29.4	3.6	0	2.1	29.4	4.7	63.8
TOTAL	11.4	159.6	7.2	100.8	4.2	58.8	4.7	63.8
LEELANAU								
SOLD	2.1	99.5	2.1	99.5	0	0	1.4	58.0
ALL OTHER DISPOSAL 4/	2.3	248.2	.7	120.1	1.6	128.1	.3	69.2
TOTAL	4.4	347.7	2.8	219.6	1.6	128.1	1.7	127.2
MANISTEE								
SOLD	3.6	104.9	3.6	88.1	0	16.8	2.4	19.5
ALL OTHER DISPOSAL 4/	2.4	116.1	.2	51.5	2.2	64.6	.1	69.8
TOTAL	6.0	221.0	3.8	139.6	2.2	81.4	2.5	89.3
MASON								
SOLD	0	218.9	0	145.0	0	73.9	0	69.3
ALL OTHER DISPOSAL 4/	0	258.7	0	183.6	0	75.1	0	94.2
TOTAL	0	477.6	0	328.6	0	149.0	0	163.5
MIDLAND								
SOLD	0	34.1	0	0	0	34.1	.9	0
ALL OTHER DISPOSAL 4/	0	336.9	0	234.3	0	102.6	0	151.3
TOTAL	0	371.0	0	234.3	0	136.7	.9	151.3
MISSAUKEE								
SOLD	3.0	99.5	1.4	45.9	1.6	53.6	.5	29.7
ALL OTHER DISPOSAL 4/	4.4	68.7	3.3	60.3	1.1	8.4	1.7	39.0
TOTAL	7.4	168.2	4.7	106.2	2.7	62.0	2.2	68.7
MONTMORENCY								
SOLD	0	99.2	0	99.2	0	0	0	0
USED WITHIN PLANT	0	15.9	0	15.9	0	0	0	0
ALL OTHER DISPOSAL 4/	7.0	257.7	4.4	120.4	2.6	137.3	2.9	151.4
TOTAL	7.0	372.8	4.4	235.5	2.6	137.3	2.9	151.4

(TABLE 27 CONT. ON NEXT PAGE)

(TABLE 27 CONT.) NORTHERN LOWER PENINSULA

COUNTY OR UNIT AND TYPE OF USE	WOOD RESIDUE							
	TOTAL		COARSE 1/		FINE 2/		BARK 3/	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
NEWAYGO								
SOLD	.1	283.7	.1	186.5	0	97.2	.1	11.3
ALL OTHER DISPOSAL 4/	2.1	225.3	1.3	134.9	.8	90.4	.8	193.7
TOTAL	2.2	509.0	1.4	321.4	.8	187.6	.9	205.0
OCEANA								
SOLD	4.5	529.7	.3	387.6	4.2	142.1	3.9	139.2
USED WITHIN PLANT	0	51.1	0	19.6	0	31.5	0	21.7
ALL OTHER DISPOSAL 4/	26.4	227.3	19.2	90.4	7.2	136.9	8.7	162.4
TOTAL	30.9	808.1	19.5	497.6	11.4	310.5	12.6	323.3
OGEMAW								
SOLD	6.8	84.0	5.7	65.1	1.1	18.9	.7	4.2
USED WITHIN PLANT	2.2	28.3	0	0	2.2	28.3	0	0
ALL OTHER DISPOSAL 4/	18.8	539.2	11.8	346.4	7.0	192.8	10.8	261.5
TOTAL	27.8	651.5	17.5	411.5	10.3	240.0	11.5	265.7
OSCEOLA								
SOLD	2.8	91.3	.7	64.6	2.1	26.7	2.7	24.2
ALL OTHER DISPOSAL 4/	9.7	250.9	7.2	151.5	2.5	99.4	2.3	113.6
TOTAL	12.5	342.2	7.9	216.1	4.6	126.1	5.0	137.8
OSCODA								
SOLD	0	134.0	0	120.0	0	14.0	0	31.0
ALL OTHER DISPOSAL 4/	83.6	360.0	52.8	192.0	30.8	168.0	34.2	170.6
TOTAL	83.6	494.0	52.8	312.0	30.8	182.0	34.2	201.6
OTSEGO								
SOLD	20.0	503.2	12.6	317.9	7.4	185.3	0	0
ALL OTHER DISPOSAL 4/	.2	148.4	.1	93.7	.1	54.7	8.1	259.2
TOTAL	20.2	651.6	12.7	411.6	7.5	240.0	8.1	259.2
PRESQUE ISLE								
ALL OTHER DISPOSAL 4/	83.6	15.2	52.8	9.6	30.8	5.6	37.0	6.2
TOTAL	83.6	15.2	52.8	9.6	30.8	5.6	37.0	6.2
ROSCOMMON								
SOLD	0	4.8	0	4.8	0	0	0	0
ALL OTHER DISPOSAL 4/	18.8	201.3	11.9	125.4	6.9	75.9	7.7	84.0
TOTAL	18.8	206.1	11.9	130.2	6.9	75.9	7.7	84.0

(TABLE 27 CONT. ON NEXT PAGE)

(TABLE 27 CONT.)

NORTHERN LOWER PENINSULA

COUNTY OR UNIT AND TYPE OF USE	WOOD RESIDUE							
	TOTAL		COARSE 1/		FINE 2/		BARK 3/	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
WEXFORD								
SOLD	2.9	110.2	1.8	69.6	1.1	40.6	1.2	41.4
ALL OTHER DISPOSAL 4/	48.8	220.1	30.8	139.0	18.0	81.1	20.0	85.7
TOTAL	51.7	330.3	32.6	208.6	19.1	121.7	21.2	127.1
ALL COUNTIES N. LOWER PENINSULA								
SOLD	140.2	4417.6	96.0	3250.2	44.2	1167.4	40.4	759.3
USED WITHIN PLANT	11.4	203.9	7.2	38.1	4.2	165.8	2.2	43.1
ALL OTHER DISPOSAL 4/	557.2	4991.0	345.6	2736.3	211.6	2174.7	261.5	3002.1
TOTAL	708.8	9532.5	448.8	6024.6	260.0	3507.9	304.1	3804.5
S. LOWER PENINSULA								
ALLEGAN								
SOLD	0	299.4	0	189.1	0	110.3	0	117.9
ALL OTHER DISPOSAL 4/	.3	8.6	.2	5.4	.1	3.2	.1	3.5
TOTAL	.3	308.0	.2	194.5	.1	113.5	.1	121.4
BARRY								
SOLD	0	785.8	0	571.4	0	214.4	0	208.5
USED WITHIN PLANT	0	0	0	0	0	0	0	150.1
ALL OTHER DISPOSAL 4/	0	78.6	0	50.0	0	28.6	0	30.9
TOTAL	0	864.4	0	621.4	0	243.0	0	389.5
BERRIEN								
SOLD	0	37.7	0	23.8	0	13.9	0	14.5
USED WITHIN PLANT	0	27.1	0	10.4	0	16.7	0	11.5
ALL OTHER DISPOSAL 4/	0	37.7	0	23.8	0	13.9	0	14.5
TOTAL	0	102.5	0	58.0	0	44.5	0	40.5
BRANCH								
SOLD	0	212.8	0	134.4	0	78.4	0	42.8
ALL OTHER DISPOSAL 4/	0	106.1	0	67.0	0	39.1	0	85.1
TOTAL	0	318.9	0	201.4	0	117.5	0	127.9
CALHOUN								
SOLD	0	1.2	0	.6	0	.6	0	.7
USED WITHIN PLANT	0	.6	0	.6	0	0	0	0
ALL OTHER DISPOSAL 4/	0	9.8	0	6.1	0	3.5	0	4.0
TOTAL	0	11.6	0	7.3	0	4.1	0	4.7
CASS								
SOLD	.5	3.8	.3	2.3	.2	1.3	.1	1.5
ALL OTHER DISPOSAL 4/	1.9	41.7	1.2	26.3	.7	15.4	.8	16.8
TOTAL	2.4	45.3	1.5	28.6	.9	16.7	.9	18.3

(TABLE 27 CONT. ON NEXT PAGE)

(TABLE 27 CONT.) SOUTHERN LOWER PENINSULA

COUNTY OF UNIT OF TYPE OF USE	WOOD RESIDUE							
	TOTAL		COARSE 1/		FINE 2/		BARK 3/	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
CLINTON								
SOLD	0	304.0	0	192.0	0	112.0	0	98.9
USED WITHIN PLANT	0	0	0	0	0	0	0	24.7
TOTAL	0	304.0	0	192.0	0	112.0	0	123.6
EATON								
SOLD	1.6	400.6	1.0	319.3	.6	80.7	.6	153.3
USED WITHIN PLANT	0	58.9	0	0	0	58.9	0	42.6
ALL OTHER DISPOSAL 4/	0	11.0	0	8.5	0	2.5	0	5.5
TOTAL	1.6	469.9	1.0	327.8	.6	142.1	.6	201.4
GENESEE								
SOLD	0	5.4	0	3.4	0	2.0	0	2.2
TOTAL	0	5.4	0	3.4	0	2.0	0	2.2
GRATIOT								
SOLD	0	22.8	0	14.4	0	8.4	0	9.3
ALL OTHER DISPOSAL 4/	0	23.9	0	15.1	0	8.8	0	9.4
TOTAL	0	46.7	0	29.5	0	17.2	0	18.7
HILLSDALE								
SOLD	0	157.4	0	99.4	0	58.0	0	63.0
ALL OTHER DISPOSAL 4/	0	26.9	0	17.0	0	9.9	0	10.9
TOTAL	0	184.3	0	116.4	0	67.9	0	73.9
HURON								
SOLD	0	174.3	0	110.1	0	64.2	0	1.6
ALL OTHER DISPOSAL 4/	0	0	0	0	0	0	0	69.5
TOTAL	0	174.3	0	110.1	0	64.2	0	71.1
INGHAM								
SOLD	0	376.3	0	239.3	0	137.0	0	92.1
ALL OTHER DISPOSAL 4/	0	32.7	0	19.0	0	13.7	0	73.3
TOTAL	0	409.0	0	258.3	0	150.7	0	165.4
IONIA								
SOLD	0	623.7	0	390.2	0	233.5	0	107.8
ALL OTHER DISPOSAL 4/	0	70.2	0	48.0	0	22.2	0	164.1
TOTAL	0	693.9	0	438.2	0	255.7	0	271.9

(TABLE 27 CONT. ON NEXT PAGE)

(TABLE 27 CONT.) SOUTHERN LOWER PENINSULA

COUNTY OR UNIT AND TYPE OF USE	WOOD RESIDUE							
	TOTAL		COARSE 1/		FINE 2/		BARK 3/	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
JACKSON								
SOLD	0	31.2	0	14.4	0	16.8	0	9.3
ALL OTHER DISPOSAL 4/	0	50.8	0	37.4	0	13.4	0	24.2
TOTAL	0	82.0	0	51.8	0	30.2	0	33.5
KALAMAZOO								
SOLD	0	48.1	0	22.2	0	25.9	0	14.3
USED WITHIN PLANT	0	10.2	0	3.9	0	6.3	0	4.3
ALL OTHER DISPOSAL 4/	0	22.2	0	22.2	0	0	0	14.3
TOTAL	0	80.5	0	48.3	0	32.2	0	32.9
KENT								
SOLD	1.3	628.5	1.3	463.4	0	165.1	.9	226.7
ALL OTHER DISPOSAL 4/	1.0	120.2	.1	9.5	.9	110.7	.1	63.5
TOTAL	2.3	748.7	1.4	472.9	.9	275.8	1.0	290.2
LAPEER								
SOLD	0	19.0	0	12.0	0	7.0	0	7.8
ALL OTHER DISPOSAL 4/	1.0	41.1	.6	26.0	.4	15.1	.4	16.8
TOTAL	1.0	60.1	.6	38.0	.4	22.1	.4	24.6
LENAWEE								
SOLD	0	132.3	0	74.7	0	57.6	0	47.9
USED WITHIN PLANT	0	8.7	0	7.4	0	1.3	0	4.7
ALL OTHER DISPOSAL 4/	0	19.4	0	19.2	0	.2	0	12.1
TOTAL	0	160.4	0	101.3	0	59.1	0	64.7
LIVINGSTON								
SOLD	0	182.4	0	115.2	0	67.2	0	74.4
TOTAL	0	182.4	0	115.2	0	67.2	0	74.4
MACOMB								
SOLD	5.5	86.6	3.6	56.6	1.9	30.0	1.7	27.6
USED WITHIN PLANT	.1	2.7	0	1.9	0	.8	0	.9
ALL OTHER DISPOSAL 4/	.5	74.1	.2	48.0	.3	31.3	.8	39.9
TOTAL	6.1	163.5	3.8	106.5	2.2	62.1	2.5	68.4
MONROE								
SOLD	1.5	185.5	2.4	228.4	1.1	135.1	0	79.9
ALL OTHER DISPOSAL 4/	.4	241.8	0	40.2	.3	21.6	1.6	90.8
TOTAL	1.9	425.3	2.4	268.6	1.4	156.7	1.6	170.7

(TABLE 27 CONT. ON NEXT PAGE)

(TABLE 27 CONT.) SOUTHERN LOWER PENINSULA

COUNTY AND UNIT AND TYPE OF USE	WOOD RESIDUE							
	TOTAL		COARSE 1/		FINE 2/		BARK 3/	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
OAKLAND								
SOLD	0	91.7	0	57.9	0	33.8	0	37.4
TOTAL	0	91.7	0	57.9	0	33.8	0	37.4
OTTAWA								
SOLD	0	24.0	0	11.1	0	12.9	0	7.2
ALL OTHER DISPOSAL 4/	0	11.1	0	11.1	0	0	0	7.2
TOTAL	0	35.1	0	22.2	0	12.9	0	14.4
SAGINAW								
SOLD	0	1147.4	0	724.7	0	422.7	0	462.0
ALL OTHER DISPOSAL 4/	0	58.3	0	36.8	0	21.5	0	23.8
TOTAL	0	1205.7	0	761.5	0	444.2	0	485.8
ST.CLAIR								
SOLD	0	187.7	0	109.7	0	78.0	0	70.0
USED WITHIN PLANT	0	6.0	0	6.0	0	0	0	3.9
ALL OTHER DISPOSAL 4/	0	37.0	0	30.0	0	7.0	0	19.4
TOTAL	0	230.7	0	145.7	0	85.0	0	93.3
ST.JOSEPH								
SOLD	0	2.9	0	2.9	0	0	0	1.9
ALL OTHER DISPOSAL 4/	0	1.7	0	0	0	1.7	0	0
TOTAL	0	4.6	0	2.9	0	1.7	0	1.9
SANILAC								
SOLD	0	3.5	0	0	0	3.5	0	0
ALL OTHER DISPOSAL 4/	0	129.5	0	84.0	0	45.5	0	53.6
TOTAL	0	133.0	0	84.0	0	49.0	0	53.6
TUSCOLA								
SOLD	0	226.6	0	104.6	0	122.0	0	67.1
ALL OTHER DISPOSAL 4/	0	123.6	0	116.6	0	7.0	0	74.9
TOTAL	0	350.2	0	221.2	0	129.0	0	142.0
VAN BUREN								
SOLD	0	12.6	0	12.6	0	0	0	7.7
USED WITHIN PLANT	0	43.6	0	20.7	0	22.9	0	18.5
ALL OTHER DISPOSAL 4/	0	9.2	0	.8	0	8.4	0	.5
TOTAL	0	65.4	0	34.1	0	31.3	0	26.7

(TABLE 27 CONT. ON NEXT PAGE)

U.S. Government Printing Office: 1974 -- 667-531

(TABLE 27 CONT.) SOUTHERN LOWER PENINSULA

COUNTY OR UNIT AND TYPE OF USE	WOOD RESIDUE							
	TOTAL		COARSE 1/		FINE 2/		BARK 3/	
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD
WASHTENAW								
SOLD	0	23.7	0	15.0	0	8.7	0	9.7
ALL OTHER DISPOSAL 4/	0	19.0	0	12.0	0	7.0	0	7.5
TOTAL	0	42.7	0	27.0	0	15.7	0	17.2
ALL COUNTIES S. LOWER PENINSULA								
SOLD	12.4	6616.1	8.6	4315.1	3.8	2301.0	3.3	2065.0
USED WITHIN PLANT	0	157.8	0	50.9	0	106.9	0	261.2
ALL OTHER DISPOSAL 4/	5.0	1231.2	2.3	780.0	2.7	451.2	3.8	936.0
TOTAL	17.4	8005.1	10.9	5146.0	6.5	2859.1	7.1	3262.2
			ALL UNITS					
TOTAL MICHIGAN								
SOLD	2102.7	18098.5	1989.0	14188.0	113.7	3910.5	54.3	2865.7
USED WITHIN PLANT	366.3	1720.4	150.7	624.3	215.6	1096.1	410.1	1864.1
ALL OTHER DISPOSAL 4/	1529.9	8929.2	541.3	3754.1	988.6	5175.1	1504.6	7175.4
TOTAL	3998.9	28748.1	2681.0	18566.4	1317.9	10181.7	1969.0	11905.2

1/ SUITABLE FOR CHIPPING SUCH AS SLABS, EDGINGS, VENEER CORES, ETC.
2/ NOT SUITABLE FOR CHIPPING SUCH AS SAWDUST, VENEER CLIPPINGS, ETC.
3/ DOES NOT INCLUDE BARK DISPOSAL AT PULPMILLS.
4/ GIVEN AWAY, INCINERATED AS WASTE, DUMPED, ETC.

Blyth, James E., Allan H. Boelter, and Carl W. Danielson.
1975. Primary forest products industry and timber use, Michigan, 1972. North Cent. For. Exp. Stn., St. Paul, Minn. 45 p., illus. (USDA For. Serv. Resour. Bull. NC-24)

Discusses recent Michigan forest industry trends; timber removals for industrial roundwood in 1972; production and receipts in 1972 of pulpwood, saw logs, veneer logs, and other roundwood products. Shows trends in pulpwood and veneer-log production, and compares saw log production in 1969 and 1972. Discusses primary wood-using plant residue and its disposition.

OXFORD: 791:792(774). KEY WORDS: pulpwood, saw logs, veneer logs, production, trends, wood residue, timber removals.

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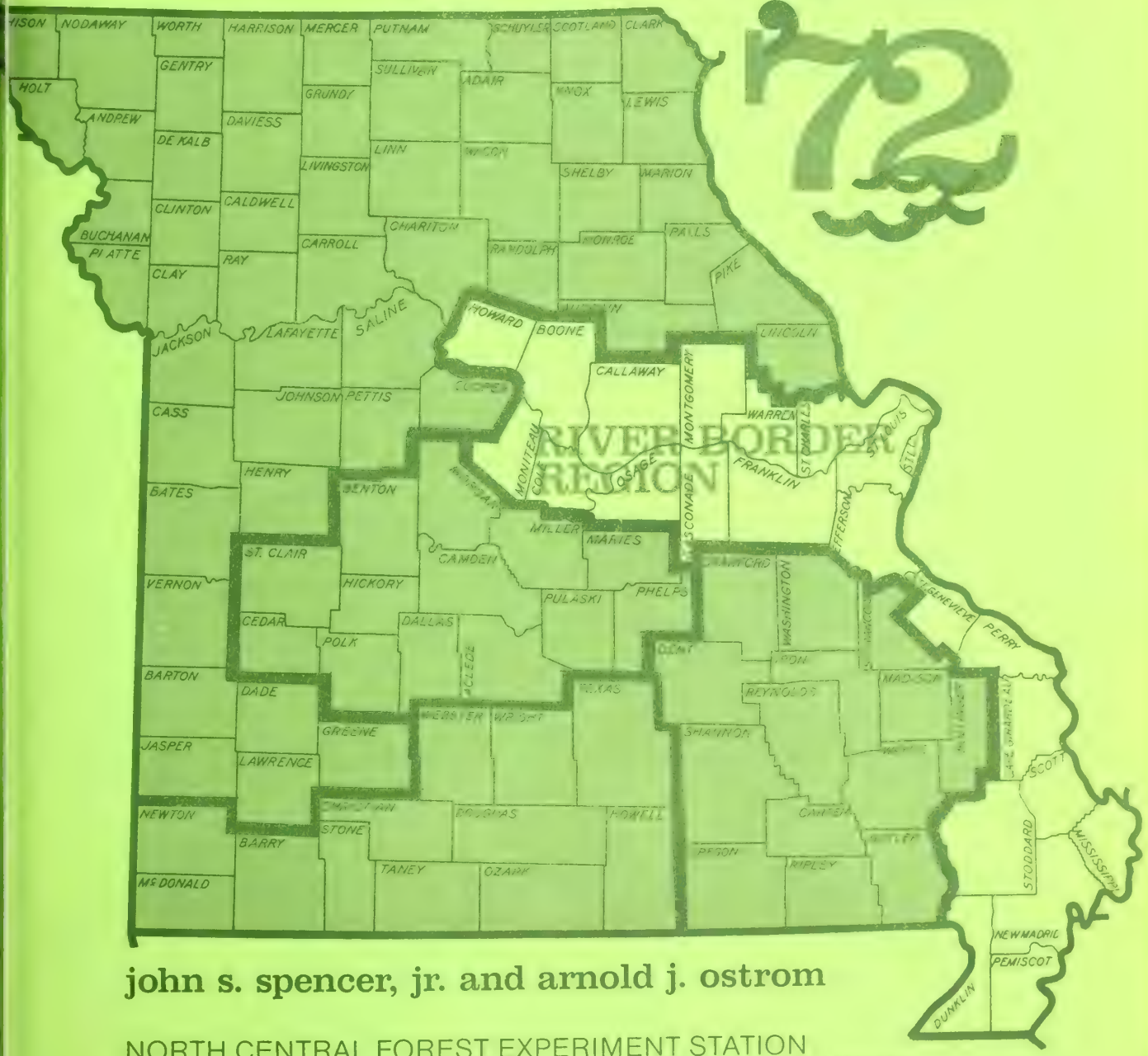

john s. spencer, jr. and arnold j. ostrom

NORTH CENTRAL FOREST EXPERIMENT STATION
FOREST SERVICE • U.S. DEPARTMENT OF AGRICULTURE

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(Maintained in cooperation with the University of Minnesota)

Spencer, John S., Jr., and Arnold J. Ostrom.
1975. Timber resource of Missouri's Riverborder, 1972. North Cent. For. Exp. Stn., St. Paul, Minn. 74 p. (USDA For. Serv Resour. Bull. NC-25)

The third timber inventory of Missouri's Riverborder Forest Survey Unit shows that neither the total volume of growing stock nor of sawtimber changed significantly between 1959 and 1972. Area of commercial forest land declined slightly. Presents statistics on forest area and timber volume, growth, mortality, ownership, and use in 1972.

OXFORD: 524.1:905.2(778). KEY WORDS: timber volume, growth, utilization, forest areas.

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FOREWORD

Forest Survey is a continuing endeavor as mandated by the McSweeney-McNary Forest Research Act of 1928. Its objective is to inventory periodically the Nation's forest lands to determine their extent, condition, and volumes of timber, growth, and depletions. This kind of up-to-date information is essential to frame intelligent forest policies and programs. USDA Forest Service regional experiment stations are charged with the responsibility for conducting these inventories and publishing summary reports for individual States. The North Central Forest Experiment Station is responsible for Forest Survey work done in Michigan, Wisconsin, Minnesota, North Dakota, eastern South Dakota, Nebraska, Iowa, Illinois, Indiana, Missouri, and Kansas.

Fieldwork for the 1972 Missouri Forest Survey was started in January 1970 and was completed in May 1973. Reports on the two previous surveys of Missouri's timber resource are dated 1947 and 1959. These earlier reports provide a basis for comparison with the information in this report for those interested in trends that have developed over the past quarter century.

Similar Resource Bulletins reporting statistical highlights and detailed tables on the timber resource of the other Survey Units in Missouri (see cover) are in preparation. These will provide the basis for a comprehensive analysis of the timber resource of the entire State which will be published as a separate report.

A higher degree of accuracy of survey information was obtained during the 1972 survey than otherwise would have been feasible because of intensified field sampling made possible by extra funding provided the North Central Station by the State Legislature through the Missouri Department of Conservation. The Department also conducted a canvass of primary wood-using plants in the State, which was used to help in estimating the quantity of timber products harvested in Missouri.

Personnel from the National Forests in Missouri installed sample plots on national forest lands, which were used to inventory those lands. The USDA Agricultural Stabilization and Conservation Service and the State Historical Society of Missouri furnished aerial photos used in the survey.

N O T E

• References to information concerning growth, mortality, and removals are dated 1971, but information concerning forest area and timber inventory incorporates changes that occurred during calendar year 1971; therefore, they represent conditions as of January 1, 1972 and are dated 1972.

• Many of the terms used in this Resource Bulletin have specialized meanings, which are defined in "Glossary of Terms Used in Resource Bulletins Reporting Missouri's 1972 Timber Resource." Copies of this Glossary can be obtained from the North Central Forest Experiment Station.

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TIMBER RESOURCE OF MISSOURI'S RIVERBORDER, 1972

John S. Spencer, Jr., and Arnold J. Ostrom

HIGHLIGHTS[1]

Forest Area

Area of forest land declined slightly from 2,237 thousand acres in 1959 to 2,157 thousand acres in 1972.

Commercial forest area slipped from 2,188 thousand acres in 1959 to 2,109 thousand acres in 1972.

Franklin County contains the largest area of commercial forest (234 thousand acres), followed by Jefferson County (216 thousand acres) and Callaway County (175 thousand acres).

Farmers, private individuals, and corporations not directly engaged in timber processing own 97 percent of the commercial forest land.

The white oak type and black-scarlet oak type dominated the commercial forest in 1972 as they did in 1959. In 1972 the white oak type totaled 701 thousand acres as compared to 504 thousand acres in 1959. The black-scarlet oak type totaled 486 thousand acres in 1972 as compared to 568 thousand acres in 1959.

Sawtimber stands account for 40 percent of commercial forest lands, followed by poletimber stands (36 percent), sapling and seedling stands (21 percent), and nonstocked areas (3 percent).

Timber Volume

Volume of growing stock (1.3 billion cubic feet) did not change significantly between 1959 and 1972.

Total sawtimber volume (3.6 billion board feet) remained virtually the same between 1959 and 1972.

Collectively, the oaks account for two-thirds of the 1972 growing-stock volume.

Average volume per acre of growing stock is 632 cubic feet (8.0 cords) in 1972, compared to 612 cubic feet (7.7 cords) in 1959.

Farmers, private individuals, and corporations not directly engaged in timber processing own 96 percent of the growing-stock volume.

Volume in rough and rotten trees that are alive (nongrowing stock) is 449 million cubic feet, most of which is in rough trees.

Short-log trees account for 76 million cubic feet of the total volume in rough and rotten trees.

Stand Conditions

Net annual growth on growing-stock trees was 34.2 million cubic feet (433 thousand cords) in 1971.

The rate of growth on growing-stock trees was 2.6 percent of inventory volume.

Mortality of growing-stock trees in 1971 amounted to 2.4 million cubic feet (30 thousand cords), largely caused by disease.

Forty-four percent of the commercial forest includes stands younger than 50 years old.

Area of commerical forest land is divided almost evenly into 10-year age classes.

Fifty-two percent of the commercial forest area is capable of growing trees 50 feet and taller at age 50, but only 16 percent is capable of growing trees 70 feet and taller at age 50.

---

[1] *Published 1959 statistics have been adjusted to be comparable with 1972 data because of changed definitions and procedures used during the two surveys.*

Fifty-five percent of the commercial forest is poorly stocked and 3 percent is nonstocked with growing-stock trees.

Timber Use

Timber removals from growing stock in 1971 amounted to 36 million cubic feet (450 thousand cords), compared to net annual growth on growing-stock trees of 34 million cubic feet (433 thousand cords). (See glossary for timber removals, page 5).

Fifty-six percent of the volume of removals from growing stock was classed as "other" removals; and therefore was not utilized (see glossary for timber removals, page 5).

The output of timber products in 1969 amounted to 23 million cubic feet; principally as saw logs (36 percent), fuelwood (24 percent), cooperage (15 percent), and pulpwood (11 percent).

Total volume of wood residues from primary plants in 1969 was 7 million cubic feet, of which 3 million cubic feet was not used.[2]

Managed Harvest[3]

For the years 1972 through 1981, annual managed harvest from growing stock on commercial forests is estimated to average 39 million cubic feet (494 thousand cords)--32 million cubic feet from harvest cuttings and 7 million cubic feet from thinnings.

During the same period, annual managed harvest from rough and rotten trees (nongrowing stock) is estimated to average 12 million cubic feet (155 thousand cords).

TABLES

Area:

1. Area of land by land class, 1959 and 1972.

2. Area of land and forest land, by county.

3. Area of commercial forest land for survey unit and for individual counties within unit, by forest type and stand-size class.

4. Area of commercial forest land, by county and ownership class.

5. Area of commercial forest land, by stand-volume and ownership class.

6. Area of commercial forest land, by area-condition and ownership class.

7. Area of commercial forest land, by site and ownership class.

8. Area of commercial forest land, by forest type and ownership class.

9. Area of commercial forest land, by forest type and stand-age class.

10. Area of commercial forest land, by forest type and site-index class.

11. Area of commercial forest land, by forest type and basal-area class.

12. Area of commercial forest land, by forest type, stand-size, and site class.

13. Area of commercial forest land, by stocking class based on selected stand components.

14. Area of commercial forest land, by stocking class of growing-stock trees and stand-size class.

15. Area of noncommercial forest land, by ownership class.

16. Area of noncommercial forest land, by forest type.

Number of Trees:

17. Number of all live trees on commercial forest land, by species and diameter class.

18. Number of growing-stock trees on commercial forest land, by species and diameter class.

19. Number of short-log trees on commercial forest land, by species and diameter class.

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[2] *Primary plants are those using logs and bolts or chips, shavings, etc., from logs and bolts.*

[3] *Managed harvest is defined in the appendix on page 72.*

Volume:

20. Net volume of growing stock and sawtimber on commercial forest land, by species, 1959 and 1972.

21. Net volume on commerical forest land for survey unit and for individual counties within unit, by species and kind of material.

22. Net volume of timber on commercial forest land, by class of timber, and softwoods and hardwoods.

23. Net volume of growing stock, sawtimber, and rough and rotten trees on commercial forest land, by individual species.

24. Net volume of growing stock and sawtimber on commercial forest land, by ownership class and species group.

25. Net volume of growing stock on commercial forest land, by species and diameter class.

26. Net volume of sawtimber on commercial forest land, by species and diameter class.

27. Net volume of growing stock on commercial forest land, by species and forest type.

28. Net volume of sawtimber on commercial forest land, by species and forest type.

29. Net volume of timber in cull trees on commercial forest land, by species and cull tree class.

30. Net volume of short-log trees on commercial forest land, by species and diameter class.

31. Net volume of sawtimber on commercial forest land, by species and log grade class.

32. Walnut volume on nonforest land, by diameter class and class of timber.

Growth and Removals:

33. Net annual growth of growing stock and sawtimber on commercial forest land, by species and county.

34. Timber removals from growing stock and sawtimber on commercial forest land, by item and species group.

35. Timber removals from growing stock and sawtimber on commercial forest land, by species and county.

Mortality:

36. Annual mortality of growing stock and sawtimber on commercial forest land, by cause and softwoods and hardwoods.

37. Annual mortality of growing stock and sawtimber on commercial forest land, by species.

Utilization:

38. Output of timber products by source of material and softwoods and hardwoods.

39. Forest products harvested, by ownership class and product.

40. Volume of primary plant residue, by kind of material and type of use.

41. Timber products output from roundwood, by species and product.

Annual Managed Harvest:

42. Average annual managed harvest for 1972-1981 from harvest cuttings and thinnings on commercial forest land, by species and kind of material.

43. Average annual managed harvest of growing stock for 1972-1981 from harvest cuttings and thinnings on commercial forest land, by species and forest type.

44. Average annual managed harvest of growing stock for 1972-1981 from harvest cuttings and thinnings on commercial forest land, by species and stand-volume class.

45. Average annual managed harvest for 1972-1981, by harvest cuttings of growing stock on commercial forest land, by species and stand-volume class.

46. Average annual managed harvest for 1972-1981, by thinnings of growing stock on commercial forest land, by species and stand-volume class.

47. Average annual managed harvest of sawtimber for 1972-1981 from harvest cuttings and thinnings on commercial forest land, by species and forest type.

48. Average annual managed harvest of sawtimber for 1972-1981 from harvest cuttings and thinnings on commercial forest land, by species and stand-volume class.

49. Average annual managed harvest for 1972-1981, by harvest cuttings of sawtimber on commercial forest land, by species and stand-volume class.

50. Average annual managed harvest for 1972-1981, by thinnings of sawtimber on commercial forest land, by species and stand-volume class.

51. Area of managed harvest for 1972-1981, by harvest cuttings on commercial forest land, by forest type and stand-age class.

52. Area of managed harvest by thinnings on commercial forest land for 1972-1981, by forest type and stand-age class.

Text Tables:

53. Sampling errors for estimates smaller than unit totals of volume, net growth, and removals, and of area of commercial forest land.

54. Forest type, site index, and rotation age by management objective used in calculation of annual managed harvest, Missouri.

Table 1.--*Area of land by land class, Riverborder, Missouri, 1959 and 1972*
(Thousand acres)

LAND CLASS	1959[1/]	1972
COMMERCIAL FOREST LAND:		
EASTERN REDCEDAR TYPE	14.93	59.30
EASTERN REDCEDAR-HARDWOOD TYPE	68.01	115.40
SHORTLEAD PINE-OAK TYPE	18.09	4.30
POST-BLACKJACK OAK TYPE	225.40	281.50
BLACK-SCARLET OAK TYPE	567.70	485.90
WHITE OAK TYPE	504.07	701.20
OAK-GUM-CYPRESS TYPE	105.40	56.60
ELM-ASH-COTTONWOOD TYPE	255.73	194.00
COTTONWOOD	1.80	4.80
MAPLE-BEECH TYPE	--	133.40
NONSTOCKED	427.33	72.50
SUBTOTAL	2,188.46	2,108.90
NONCOMMERCIAL FOREST LAND:		
UNPRODUCTIVE	32.10	32.40
PRODUCTIVE-RESERVED	16.10	16.10
SUBTOTAL	48.20	48.50
NONFOREST LAND	5,774.54	5,850.90
TOTAL	8,011.20	8,008.30

1/ FIGURES HAVE BEEN ADJUSTED FROM THOSE PUBLISHED PREVIOUSLY FOR 1959 TO CONFORM TO 1972 LAND CLASSES BECAUSE OF CHANGES IN SURVEY DEFINITIONS AND PROCEDURES.

Table 2.--*Area of land and forest land, by county, Riverborder, Missouri, 1972*

COUNTY	LAND AREA	FOREST LAND			COMMERCIAL FOREST AS A PERCENT OF LAND AREA
		ALL FOREST	NONCOMMERCIAL	COMMERCIAL	
	THOUSAND ACRES				PERCENT
BOONE	438.3	112.6	3.0	109.6	25
CALLAWAY	534.4	179.0	3.5	175.5	33
CAPE GIRARDEAU	367.3	91.1	3.7	87.4	24
COLE	245.7	79.8	1.9	77.9	32
DUNKLIN	347.5	20.1	--	20.1	6
FRANKLIN	597.6	243.7	9.2	234.5	39
GASCONADE	332.4	157.4	3.1	154.3	46
HOWARD	301.7	63.6	1.1	62.5	21
JEFFERSON	427.3	219.8	3.3	216.5	51
MISSISSIPPI	265.7	13.8	.9	12.9	5
MONITEAU	268.0	61.1	1.5	59.6	22
MONTGOMERY	341.7	104.4	2.3	102.1	30
NEW MADRID	434.8	15.5	--	15.5	4
OSAGE	388.9	174.3	4.1	170.2	44
PEMISCOT	315.4	11.8	--	11.8	4
PERRY	301.4	104.6	1.2	103.4	34
ST. CHARLES	352.6	90.1	.5	89.6	25
ST. LOUIS	358.8	68.9	2.8	66.1	18
STE. GENEVIEVE	319.6	156.6	4.8	151.8	47
SCOTT	269.5	18.0	--	18.0	7
STODDARD	526.8	46.1	--	46.1	9
WARREN	272.9	125.1	1.6	123.5	45
ALL COUNTIES	8,008.3	2,157.4	48.5	2,108.9	26

Table 3.--*Area of commercial forest land for Missouri's Riverborder Survey Unit and for individual counties within Unit, by forest type and stand-size class, 1972*

(Thousand acres)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Non-stocked areas
ALL COUNTIES					
Eastern redcedar	59.3	4.5	22.5	32.3	--
Eastern redcedar-hardwood	115.4	16.0	12.7	86.7	--
Shortleaf pine-oak	4.3	1.1	3.2	--	--
Post-blackjack oak	281.5	48.2	175.0	58.3	--
Black-scarlet oak	485.9	181.6	159.6	144.7	--
White oak	701.2	407.8	250.8	42.6	--
Oak-gum-cypress	56.6	27.1	25.6	3.9	--
Elm-ash-cottonwood	194.0	105.9	61.5	26.6	--
Cottonwood	4.8	4.8	--	--	--
Maple-beech	133.4	45.7	47.4	40.3	--
Nonstocked 1/	72.5	--	--	--	72.5
All forest types	2,108.9	842.7	758.3	435.4	72.5
BOONE COUNTY					
Eastern redcedar	3.3	.2	1.0	2.1	--
Eastern redcedar-hardwood	7.1	.6	.7	5.8	--
Post-blackjack oak	16.0	2.2	10.1	3.7	--
Black-scarlet oak	25.6	8.7	8.5	8.4	--
White oak	34.8	19.5	12.6	2.7	--
Oak-gum-cypress	1.8	.5	1.3	--	--
Elm-ash-cottonwood	9.1	4.7	2.9	1.5	--
Cottonwood	.2	.2	--	--	--
Maple-beech	7.8	2.4	2.4	3.0	--
Nonstocked 1/	3.9	--	--	--	3.9
All forest types	109.6	39.0	39.5	27.2	3.9
CALLAWAY COUNTY					
Eastern redcedar	4.2	.3	1.3	2.6	--
Eastern redcedar-hardwood	9.4	1.2	1.2	7.0	--
Post-blackjack oak	28.0	3.6	18.1	6.3	--
Black-scarlet oak	42.1	14.7	14.6	12.8	--
White oak	58.5	31.9	22.7	3.9	--
Oak-gum-cypress	3.4	.9	2.5	--	--
Elm-ash-cottonwood	12.7	6.6	4.3	1.8	--
Cottonwood	.2	.2	--	--	--
Maple-beech	11.5	3.6	3.8	4.1	--
Nonstocked 1/	5.5	--	--	--	5.5
All forest types	175.5	63.0	68.5	38.5	5.5
CAPE GIRARDEAU COUNTY					
Eastern redcedar	2.4	.2	.7	1.5	--
Eastern redcedar-hardwood	5.2	.6	.4	4.2	--
Post-blackjack oak	10.8	2.3	6.3	2.2	--
Black-scarlet oak	18.6	7.4	6.3	4.9	--
White oak	32.7	21.1	10.1	1.5	--
Oak-gum-cypress	1.1	.3	.8	--	--
Elm-ash-cottonwood	7.5	4.1	2.3	1.1	--
Cottonwood	.2	.2	--	--	--
Maple-beech	6.1	1.9	2.0	2.2	--
Nonstocked 1/	2.8	--	--	--	2.8
All forest types	87.4	38.1	28.9	17.6	2.8

1/ See glossary for stand-size classes (page 3). (Table 3 cont. on next page)

(Table 3 cont.)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Non-stocked areas
COLE COUNTY					
Eastern redcedar	2.9	.1	.8	2.0	--
Eastern redcedar-hardwood	6.1	.7	.6	4.8	--
Post-blackjack oak	12.1	1.4	7.8	2.9	--
Black-scarlet oak	18.2	6.0	6.1	6.1	--
White oak	23.7	13.1	8.6	2.0	--
Oak-gum-cypress	1.3	.3	1.0	--	--
Elm-ash-cottonwood	5.2	2.1	1.8	1.3	--
Cottonwood	.1	.1	--	--	--
Maple-beech	4.7	1.4	1.5	1.8	--
Nonstocked 1/	3.6	--	--	--	3.6
All forest types	77.9	25.2	28.2	20.9	3.6
DUNKLIN COUNTY					
Post-blackjack oak	.4	.4	--	--	--
Black-scarlet oak	1.7	.8	.5	.4	--
White oak	1.0	--	.2	.8	--
Oak-gum-cypress	5.7	4.5	.8	.4	--
Elm-ash-cottonwood	9.7	6.7	2.1	.9	--
Cottonwood	.2	.2	--	--	--
Maple-beech	.6	--	.6	--	--
Nonstocked 1/	.8	--	--	--	.8
All forest types	20.1	12.6	4.2	2.5	.8
FRANKLIN COUNTY					
Eastern redcedar	8.3	.8	3.8	3.7	--
Eastern redcedar-hardwood	13.0	2.3	1.2	9.5	--
Shortleaf pine-oak	.6	.6	--	--	--
Post-blackjack oak	28.4	6.7	16.8	4.9	--
Black-scarlet oak	55.0	22.2	17.3	15.5	--
White oak	89.0	55.4	30.5	3.1	--
Oak-gum-cypress	3.0	1.4	1.6	--	--
Elm-ash-cottonwood	16.3	8.0	5.8	2.5	--
Cottonwood	.3	.3	--	--	--
Maple-beech	14.1	4.6	5.4	4.1	--
Nonstocked 1/	6.5	--	--	--	6.5
All forest types	234.5	102.3	82.4	43.3	6.5
GASCONADE COUNTY					
Eastern redcedar	3.2	.4	1.3	1.5	--
Eastern redcedar-hardwood	7.7	.9	1.5	5.3	--
Post-blackjack oak	26.5	4.0	16.8	5.7	--
Black-scarlet oak	35.4	13.8	12.9	8.7	--
White oak	58.6	33.7	22.1	2.8	--
Oak-gum-cypress	2.5	.8	1.7	--	--
Elm-ash-cottonwood	9.1	4.4	3.3	1.4	--
Cottonwood	.1	.1	--	--	--
Maple-beech	7.5	2.4	3.4	1.7	--
Nonstocked 1/	3.7	--	--	--	3.7
All forest types	154.3	60.5	63.0	27.1	3.7

1/ See glossary for stand-size classes (page 3)

(Table 3 cont. on next page)

(Table 3 cont.)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Non-stocked areas
HOWARD COUNTY					
Eastern redcedar	2.6	.1	.8	1.7	--
Eastern redcedar-hardwood	4.6	.3	.3	4.0	--
Post-blackjack oak	7.6	1.2	4.7	1.7	--
Black-scarlet oak	15.2	5.0	4.7	5.5	--
White oak	18.8	10.8	6.3	1.7	--
Oak-gum-cypress	.9	.3	.6	--	--
Elm-ash-cottonwood	5.2	2.4	1.6	1.2	--
Cottonwood	.1	.1	--	--	--
Maple-beech	4.9	1.5	1.3	2.1	--
Nonstocked 1/	2.6	--	--	--	2.6
All forest types	62.5	21.7	20.3	17.9	2.6
JEFFERSON COUNTY					
Eastern redcedar	8.5	.6	3.5	4.4	--
Eastern redcedar-hardwood	10.5	2.2	1.4	6.9	--
Post-blackjack oak	29.2	5.3	18.4	5.5	--
Black-scarlet oak	53.2	20.0	16.9	16.3	--
White oak	80.9	49.0	28.3	3.6	--
Oak-gum-cypress	3.0	1.4	1.6	--	--
Elm-ash-cottonwood	11.1	5.0	3.9	2.2	--
Cottonwood	.1	.1	--	--	--
Maple-beech	12.0	4.0	4.6	3.4	--
Nonstocked 1/	8.0	--	--	--	8.0
All forest types	216.5	87.6	78.6	42.3	8.0
MISSISSIPPI COUNTY					
Oak-gum-cypress	3.1	1.2	1.1	.8	--
Elm-ash-cottonwood	7.9	4.8	2.7	.4	--
Cottonwood	.5	.5	--	--	--
Maple-beech	.6	--	.6	--	--
Nonstocked 1/	.8	--	--	--	.8
All forest types	12.9	6.5	4.4	1.2	.8
MONITEAU COUNTY					
Eastern redcedar	2.3	.1	.7	1.5	--
Eastern redcedar-hardwood	4.2	.2	.4	3.6	--
Post-blackjack oak	9.4	.8	6.2	2.4	--
Black-scarlet oak	15.1	4.2	4.7	6.2	--
White oak	16.7	8.4	6.4	1.9	--
Oak-gum-cypress	1.3	.5	.8	--	--
Elm-ash-cottonwood	3.3	1.2	1.2	.9	--
Maple-beech	4.5	1.0	1.3	2.2	--
Nonstocked 1/	2.8	--	--	--	2.8
All forest types	59.6	16.4	21.7	18.7	2.8

1/ See glossary for stand-size classes (page 3). (Table 3 cont. on next page)

(Table 3 cont.)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Non-stocked areas
MONTGOMERY COUNTY					
Eastern redcedar	1.7	.1	.5	1.1	—
Eastern redcedar-hardwood	7.9	1.1	.7	6.1	--
Post-blackjack oak	16.2	2.0	10.4	3.8	--
Black-scarlet oak	22.7	8.1	8.4	6.2	--
White oak	30.7	16.8	11.6	2.3	--
Oak-gum-cypress	1.9	.4	1.5	--	--
Elm-ash-cottonwood	9.9	6.0	2.8	1.1	--
Cottonwood	.3	.3	--	--	--
Maple-beech	7.1	2.6	2.4	2.1	--
Nonstocked 1/	3.7	--	--	--	3.7
All forest types	102.1	37.4	38.3	22.7	3.7
NEW MADRID COUNTY					
Oak-gum-cypress	3.2	1.4	.9	.9	--
Elm-ash-cottonwood	10.1	6.0	3.2	.9	--
Cottonwood	.4	.4	--	--	--
Maple-beech	.8	--	.8	--	--
Nonstocked 1/	1.0	--	--	--	1.0
All forest types	15.5	7.8	4.9	1.8	1.0
OSAGE COUNTY					
Eastern redcedar	6.3	.3	2.3	3.7	--
Eastern redcedar-hardwood	8.6	1.3	1.2	6.1	--
Post-blackjack oak	26.7	3.4	17.5	5.8	--
Black-scarlet oak	42.7	13.9	14.0	14.8	--
White oak	55.5	30.8	20.4	4.3	--
Oak-gum-cypress	3.2	1.2	2.0	--	--
Elm-ash-cottonwood	10.8	5.6	3.5	1.7	--
Cottonwood	.2	.2	--	--	--
Maple-beech	9.8	3.5	3.6	2.7	--
Nonstocked 1/	6.4	--	--	--	6.4
All forest types	170.2	60.2	64.5	39.1	6.4
PEMISCOT COUNTY					
White oak	.3	--	.3	--	—
Oak-gum-cypress	2.4	1.8	.5	.1	--
Elm-ash-cottonwood	7.4	4.7	2.5	.2	--
Cottonwood	.4	.4	--	--	--
Maple-beech	.7	--	.7	--	--
Nonstocked 1/	.6	--	--	--	.6
All forest types	11.8	6.9	4.0	.3	.6

1/ See glossary for stand-size classes (page 3). (Table 3 cont. on next page)

(Table 3 cont.)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Non-stocked areas
PERRY COUNTY					
Eastern redcedar	2.7	.3	1.0	1.4	--
Eastern redcedar-hardwood	5.7	1.0	.4	4.3	--
Shortleaf pine-oak	.5	--	.5	--	--
Post-blackjack oak	13.4	2.8	8.1	2.5	--
Black-scarlet oak	24.2	9.5	7.8	6.9	--
White oak	38.7	23.7	13.3	1.7	--
Oak-gum-cypress	1.3	.6	.7	--	--
Elm-ash-cottonwood	7.6	3.6	2.6	1.4	--
Cottonwood	.2	.2	--	--	--
Maple-beech	6.5	2.0	2.5	2.0	--
Nonstocked 1/	2.6	--	--	--	2.6
All forest types	103.4	43.7	36.9	20.2	2.6
ST. CHARLES COUNTY					
Eastern redcedar	1.9	.2	.7	1.0	--
Eastern redcedar-hardwood	6.2	1.0	.2	5.0	--
Post-blackjack oak	7.7	2.3	4.0	1.4	--
Black-scarlet oak	17.0	6.6	6.0	4.4	--
White oak	30.0	19.3	9.6	1.1	--
Oak-gum-cypress	1.1	.3	.8	--	--
Elm-ash-cottonwood	14.7	9.2	4.0	1.5	--
Cottonwood	.6	.6	--	--	--
Maple-beech	7.3	3.4	2.1	1.8	--
Nonstocked 1/	3.1	--	--	--	3.1
All forest types	89.6	42.9	27.4	16.2	3.1
ST. LOUIS COUNTY					
Eastern redcedar	2.4	.2	.9	1.3	--
Eastern redcedar-hardwood	5.6	.8	.5	4.3	--
Post-blackjack oak	6.3	1.6	3.5	1.2	--
Black-scarlet oak	14.6	5.2	4.3	5.1	--
White oak	20.1	12.4	6.4	1.3	--
Oak-gum-cypress	1.0	.4	.6	--	--
Elm-ash-cottonwood	7.3	4.3	2.2	.8	--
Cottonwood	.2	.2	--	--	--
Maple-beech	5.8	1.9	1.8	2.1	--
Nonstocked 1/	2.8	--	--	--	2.8
All forest types	66.1	27.0	20.2	16.1	2.8
STE. GENEVIEVE COUNTY					
Eastern redcedar	3.8	.3	1.6	1.9	--
Eastern redcedar-hardwood	7.1	.8	1.2	5.1	--
Shortleaf pine-oak	3.2	.5	2.7	--	--
Post-blackjack oak	24.5	3.3	16.1	5.1	--
Black-scarlet oak	37.4	12.6	12.7	12.1	--
White oak	53.7	30.2	20.4	3.1	--
Oak-gum-cypress	2.8	1.2	1.6	--	--
Elm-ash-cottonwood	6.7	2.7	2.6	1.4	--
Maple-beech	8.7	2.6	3.4	2.7	--
Nonstocked 1/	3.9	--	--	--	3.9
All forest types	151.8	54.2	62.3	31.4	3.9

1/ See glossary for stand-size classes (page 3). (Table 3 cont. on next page)

(Table 3 cont.)

Forest type	All stands	Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
SCOTT COUNTY					
Post-blackjack oak	.5	.5	--	--	--
Black-scarlet oak	6.5	4.6	1.1	.8	--
White oak	4.7	2.1	1.6	1.0	--
Oak-gum-cypress	1.7	1.2	.5	--	--
Elm-ash-cottonwood	2.5	1.4	.9	.2	--
Cottonwood	.1	.1	--	--	--
Maple-beech	1.7	1.4	.3	--	--
Non-stocked 1/	.3	--	--	--	.3
All forest types	18.0	11.3	4.4	2.0	.3
STODDARD COUNTY					
Post-blackjack oak	1.4	1.4	--	--	--
Black-scarlet oak	13.6	8.1	3.2	2.3	--
White oak	8.2	3.1	3.1	2.0	--
Oak-gum-cypress	9.0	5.8	1.5	1.7	--
Elm-ash-cottonwood	9.3	6.7	1.8	.8	--
Cottonwood	.2	.2	--	--	--
Maple-beech	3.6	2.6	.3	.7	--
Nonstocked 1/	.8	--	--	--	.8
All forest types	46.1	27.9	9.9	7.5	.8
WARREN COUNTY					
Eastern redcedar	2.8	.3	1.6	.9	--
Eastern redcedar-hardwood	6.5	1.0	.8	4.7	--
Post-blackjack oak	16.4	3.0	10.2	3.2	--
Black-scarlet oak	27.1	10.2	9.6	7.3	--
White oak	44.6	26.5	16.3	1.8	--
Oak-gum-cypress	1.9	.7	1.2	--	--
Elm-ash-cottonwood	10.6	5.7	3.5	1.4	--
Cottonwood	.2	.2	--	--	--
Maple-beech	7.1	2.9	2.6	1.6	--
Nonstocked 1/	6.3	--	--	--	6.3
All forest types	123.5	50.5	45.8	20.9	6.3

1/ See glossary for stand-size classes (page 3).

Table 4.--*Area of commercial forest land, by county and ownership class, Riverborder, Missouri, 1972*
(Thousand acres)

COUNTY	ALL OWNERSHIPS	NATIONAL FOREST	OTHER FEDERAL	STATE, COUNTY, AND MUNICIPAL	FOREST INDUSTRY	FARMER AND MISCELLANEOUS PRIVATE
BOONE	109.6	--	0.7	1.7	--	107.2
CALLAWAY	175.5	--	3.4	.2	--	171.9
CAPE GIRARDEAU	87.4	--	--	.1	--	87.3
COLE	77.9	--	--	.1	--	77.8
DUNKLIN	20.1	--	--	2.9	2.5	14.7
FRANKLIN	234.5	--	--	.2	--	234.3
GASCONADE	154.3	--	--	--	--	154.3
HOWARD	62.5	--	--	1.3	--	61.2
JEFFERSON	216.5	--	--	--	--	216.5
MISSISSIPPI	12.9	--	--	--	2.0	10.9
MONITEAU	59.6	--	--	--	--	59.6
MONTGOMERY	102.1	--	--	1.2	.1	100.8
NEW MADRID	15.5	--	--	--	6.0	9.5
OSAGE	170.2	--	--	--	--	170.2
PEMISCOT	11.8	--	--	2.0	2.5	7.3
PERRY	103.4	--	--	--	--	103.4
ST. CHARLES	89.6	--	1.0	3.8	--	84.8
ST. LOUIS	66.1	--	--	3.2	--	62.9
STE. GENEVIEVE	151.8	9.2	--	--	--	142.6
SCOTT	18.0	--	--	--	--	18.0
STODDARD	46.1	--	8.0	1.8	--	36.3
WARREN	123.5	--	--	4.1	1.3	118.1
ALL COUNTIES	2,108.9	9.2	13.1	22.6	14.4	2,049.6

Table 5.--*Area of commercial forest land, by stand-volume and ownership class, Riverborder, Missouri, 1972*
(Thousand acres)

STAND VOLUME PER ACRE[1/] (BOARD FEET)	ALL OWNERSHIPS	NATIONAL FOREST	OTHER FEDERAL	STATE, COUNTY, AND MUNICIPAL	FOREST INDUSTRY	FARMER AND MISCELLANEOUS PRIVATE
LESS THAN 1,500	1,007.4	6.1	9.4	9.3	7.2	975.4
1,500 TO 5,000	922.8	3.1	3.3	9.6	7.1	899.7
MORE THAN 5,000	178.7	--	.4	3.7	.1	174.5
ALL CLASSES	2,108.9	9.2	13.1	22.6	14.4	2,049.6

1/ INTERNATIONAL 1/4-INCH RULE.

Table 6.--*Area of commercial forest land, by area-condition and ownership class, Riverborder, Missouri, 1972*
(Thousand acres)

AREA-CONDITION CLASS 1/	ALL OWNERSHIPS	NATIONAL FOREST	OTHER FEDERAL	STATE, COUNTY, AND MUNICIPAL	FOREST INDUSTRY	FARMER AND MISCELLANEOUS PRIVATE
40	4.8	--	--	--	--	4.8
50	70.5	--	1.1	3.2	--	66.2
60	847.7	5.4	5.8	12.9	5.8	817.8
70	1,185.9	3.8	6.2	6.5	8.6	1,160.8
ALL CLASSES	2,108.9	9.2	13.1	22.6	14.4	2,049.6

1/ See glossary for area-condition classes (page 2).

Table 7.--*Area of commercial forest land, by site and ownership class, Riverborder, Missouri, 1972*
(Thousand acres)

SITE CLASS (CUBIC FEET OF GROWTH PER ACRE PER YEAR)	ALL OWNERSHIPS	NATIONAL FOREST	OTHER FEDERAL	STATE, COUNTY AND MUNICIPAL	FOREST INDUSTRY	FARMER AND MISCELLANEOUS PRIVATE
165 OR MORE	3.1	--	--	--	--	3.1
120-164	24.9	--	--	--	2.6	22.3
85-119	106.4	--	5.9	3.5	8.0	89.0
50-84	318.4	1.9	2.1	6.6	2.6	305.2
LESS THAN 50	1,656.1	7.3	5.1	12.5	1.2	1,630.0
ALL CLASSES	2,108.9	9.2	13.1	22.6	14.4	2,049.6

Table 8.--*Area of commercial forest land, by forest type and ownership class, Riverborder, Missouri, 1972*
(Thousand acres)

FOREST TYPE	ALL OWNERSHIPS	NATIONAL FOREST 1/	OTHER FEDERAL	STATE, COUNTY, AND MUNICIPAL	FOREST INDUSTRY	FARMER AND MISCELLANEOUS PRIVATE
EASTERN REDCEDAR	59.3	--	--	--	--	59.3
EASTERN REDCEDAR-HARDWOOD	115.4	--	--	--	--	115.4
SHORTLEAF PINE-OAK	4.3	2.1	--	--	--	2.2
POST-BLACKJACK OAK	281.5	.1	--	--	--	281.4
BLACK-SCARLET OAK	485.9	--	--	6.2	.6	479.1
WHITE OAK	701.2	6.6	--	3.9	.8	689.9
OAK-GUM-CYPRESS	56.6	--	8.0	5.9	--	42.7
ELM-ASH-COTTONWOOD	194.0	.4	5.1	4.3	11.2	173.0
COTTONWOOD	4.8	--	--	--	1.8	3.0
MAPLE-BEECH	133.4	--	--	--	--	133.4
NONSTOCKED 2/	72.5	--	--	2.3	--	70.2
ALL FOREST TYPES	2,108.9	9.2	13.1	22.6	14.4	2,049.6

1/ ESTIMATES OF AREA OF SOME FOREST TYPES FOR NATIONAL FOREST OWNER DIFFER FROM THOSE SHOWN IN CURRENT TIMBER MANAGEMENT PLANS FOR THE NATIONAL FORESTS IN MISSOURI.
2/ SEE GLOSSARY FOR STAND-SIZE CLASSES (PAGE 3).

Table 9.--*Area of commercial forest land, by forest type and stand-age class, Riverborder, Missouri, 1972*
(Thousand acres)

FOREST TYPE	ALL AGES	STAND AGE CLASS (YEARS)												
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	120-139	140+
EASTERN REDCEDAR	59.3	11.6	20.7	--	--	--	3.4	14.0	3.4	6.2	--	--	--	--
E. REDCEDAR-HARDWD	115.4	39.3	38.7	8.7	--	4.3	--	14.0	--	--	2.6	7.8	--	--
SHORTLEAF PINE OAK	4.3	--	--	--	--	3.2	--	--	--	--	1.1	--	--	--
POST-BLACKJACK OAK	281.5	5.3	37.1	10.7	21.3	21.1	44.2	21.1	40.1	34.0	16.0	15.9	14.7	--
BLACK-SCARLET OAK	485.9	56.3	70.9	35.1	60.6	62.6	50.1	32.9	23.2	29.2	15.5	28.6	20.9	--
WHITE OAK	701.2	13.8	22.8	11.3	26.7	59.8	66.3	75.5	91.5	87.9	98.4	117.5	29.7	--
OAK-GUM-CYPRESS	56.6	3.0	.9	18.1	8.9	--	6.7	6.7	--	--	3.9	7.0	1.4	--
ELM-ASH-COTTONWOOD	194.0	20.8	5.8	46.4	37.8	17.4	17.9	21.4	4.2	8.4	8.1	3.7	2.1	--
COTTONWOOD	4.8	--	--	3.0	--	1.8	--	--	--	--	--	--	--	--
MAPLE-BEECH	133.4	33.1	6.5	5.7	19.2	13.2	6.3	5.1	14.3	9.6	11.1	4.7	4.6	--
NONSTOCKED 1/	72.5	26.4	12.1	10.7	--	1.8	11.0	--	4.5	6.0	--	--	--	--
ALL FOREST TYPES	2108.9	209.6	215.5	149.7	174.5	185.2	205.9	190.7	181.2	181.3	156.7	185.2	73.4	--

1/ See glossary for stand-size classes (page 3).

Table 10.--*Area of commercial forest land, by forest type and site-index class, Riverborder, Missouri, 1972*
(Thousand acres)

FOREST TYPE	ALL CLASSES	SITE-INDEX CLASS (HEIGHT IN FEET AT 50 YEARS)									
		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90+
EASTERN REDCEDAR	59.3	--	--	9.0	38.0	12.3	--	--	--	--	--
E. REDCEDAR-HARDWD	115.4	--	--	5.8	47.0	29.6	12.7	14.5	5.8	--	--
SHORTLEAF PINE OAK	4.3	--	--	--	--	3.2	--	1.1	--	--	--
POST-BLACKJACK OAK	281.5	--	--	41.8	105.6	70.7	55.7	5.4	2.3	--	--
BLACK-SCARLET OAK	485.9	--	--	--	34.3	89.3	178.8	117.4	41.4	21.8	2.9
WHITE OAK	701.2	--	--	--	221.7	209.2	170.4	45.7	46.2	8.0	--
OAK-GUM-CYPRESS	56.6	--	--	--	--	6.2	5.1	11.1	9.1	13.1	12.0
ELM-ASH-COTTONWOOD	194.0	--	--	--	8.6	8.0	17.0	37.5	26.6	42.2	54.1
COTTONWOOD	4.8	--	--	--	--	--	--	--	--	--	4.8
MAPLE-BEECH	133.4	--	--	--	4.7	21.6	39.3	27.5	30.5	9.8	--
NONSTOCKED 1/	72.5	--	--	16.4	21.4	--	14.8	5.7	10.0	4.2	--
ALL FOREST TYPES	2108.9	--	--	73.0	481.3	450.1	493.8	265.9	171.9	99.1	73.8

1/ See glossary for stand-size classes (page 3).

Table 11.--*Area of commerical forest land, by forest type and basal-area class, Riverborder, Missouri, 1972.*
(Thousand acres)

FOREST TYPE	ALL CLASSES	BASAL-AREA CLASS (SQUARE FEET PER ACRE)									
		0-19	20-39	40-59	60-79	80-99	100-119	120-139	140-159	160-179	180+
EASTERN REDCEDAR	59.3	6.0	4.7	28.0	20.6	--	--	--	--	--	--
E. REDCEDAR-HARDWD	115.4	25.3	27.2	39.3	12.5	11.1	--	--	--	--	--
SHORTLEAF PINE OAK	4.3	--	--	--	4.3	--	--	--	--	--	--
POST-BLACKJACK OAK	281.5	5.4	--	68.1	112.5	49.6	45.9	--	--	--	--
BLACK-SCARLET OAK	485.9	23.4	20.4	149.4	146.8	110.4	35.5	--	--	--	--
WHITE OAK	701.2	6.2	13.8	87.5	251.6	230.4	107.4	4.3	--	--	--
OAK-GUM-CYPRESS	56.6	--	1.9	14.8	20.2	2.9	8.5	4.8	3.5	--	--
ELM-ASH-COTTONWOOD	194.0	9.6	22.8	42.9	46.2	43.2	14.7	10.9	3.7	--	--
COTTONWOOD	4.8	--	--	--	--	1.8	3.0	--	--	--	--
MAPLE-BEECH	133.4	26.6	13.3	36.0	35.2	15.6	6.7	--	--	--	--
NONSTOCKED 1/	72.5	29.1	27.6	6.0	4.5	5.3	--	--	--	--	--
ALL FOREST TYPES	2108.9	131.6	131.7	472.0	654.4	470.3	221.7	20.0	7.2	--	--

1/ See glossary for stand-size classes (page 3).

Table 12.--*Area of commercial forest land, by forest type, stand-size, and site class, Riverborder, Missouri, 1972*
(Thousand acres)

FOREST TYPE AND STAND-SIZE CLASS	ALL SITE CLASSES	165 CU. FT. OR MORE	120 TO 165 CU. FT.	85 TO 120 CU. FT.	50 TO 85 CU. FT.	LESS THAN 50 CU. FT.
EASTERN REDCEDAR						
SAWTIMBER	4.5	--	--	--	--	4.5
POLETIMBER	22.5	--	--	--	--	22.5
SAPLING AND SEEDLING	32.3	--	--	--	--	32.3
ALL STANDS	59.3	--	--	--	--	59.3
EASTERN REDCEDAR-HARDWOOD						
SAWTIMBER	16.0	--	--	--	--	16.0
POLETIMBER	12.7	--	--	--	--	12.7
SAPLING AND SEEDLING	86.7	--	--	--	5.7	81.0
ALL STANDS	115.4	--	--	--	5.7	109.7
SHORTLEAF PINE-OAK						
SAWTIMBER	1.1	--	--	--	1.1	--
POLETIMBER	3.2	--	--	--	--	3.2
SAPLING AND SEEDLING	--	--	--	--	--	--
ALL STANDS	4.3	--	--	--	1.1	3.2
POST-BLACKJACK OAK						
SAWTIMBER	48.2	--	--	--	2.3	45.9
POLETIMBER	175.0	--	--	--	--	175.0
SAPLING AND SEEDLING	58.3	--	--	--	5.4	52.9
ALL STANDS	281.5	--	--	--	7.7	273.8
BLACK-SCARLET OAK						
SAWTIMBER	181.6	--	--	--	62.8	118.8
POLETIMBER	159.6	--	--	10.0	25.2	124.4
SAPLING AND SEEDLING	144.7	--	--	13.4	5.5	125.8
ALL STANDS	485.9	--	--	23.4	93.5	369.0
WHITE OAK						
SAWTIMBER	407.8	--	--	--	43.0	364.8
POLETIMBER	250.8	--	--	--	20.6	230.2
SAPLING AND SEEDLING	42.6	--	--	--	13.5	29.1
ALL STANDS	701.2	--	--	--	77.1	624.1
OAK-GUM-CYPRESS						
SAWTIMBER	27.1	--	--	18.7	3.9	4.5
POLETIMBER	25.6	--	--	5.0	8.9	11.7
SAPLING AND SEEDLING	3.9	--	--	1.1	2.8	--
ALL STANDS	56.6	--	--	24.8	15.6	16.2
ELM-ASH-COTTONWOOD						
SAWTIMBER	105.9	3.1	23.1	30.6	31.4	17.7
POLETIMBER	61.5	--	--	11.0	15.6	34.9
SAPLING AND SEEDLING	26.6	--	--	7.9	7.1	11.6
ALL STANDS	194.0	3.1	23.1	49.5	54.1	64.2
COTTONWOOD						
SAWTIMBER	4.8	--	1.8	3.0	--	--
POLETIMBER	--	--	--	--	--	--
SAPLING AND SEEDLING	--	--	--	--	--	--
ALL STANDS	4.8	--	1.8	3.0	--	--
MAPLE-BEECH						
SAWTIMBER	41.7	--	--	--	23.2	18.5
POLETIMBER	48.1	--	--	--	23.1	25.0
SAPLING AND SEEDLING	43.6	--	--	.7	9.8	33.1
ALL STANDS	133.4	--	--	.7	56.1	76.6
NONSTOCKED 1/	72.5	--	--	5.0	7.5	60.0
TOTAL ALL TYPES	2,108.9	3.1	24.9	106.4	318.4	1,656.1

1/ See glossary for stand-size classes (page 3).

Table 13.--*Area of commercial forest land, by stocking class based on selected stand components, Riverborder, Missouri, 1972*
(Thousand acres)

STOCKING PERCENTAGE	STOCKING CLASSIFIED IN TERMS OF					
	ALL TREES	GROWING-STOCK TREES			ROUGH AND ROTTEN TREES	INHIBITING VEGETATION
		TOTAL	DESIRABLE	ACCEPTABLE		
140+	3.3	--	--	--	--	--
130-139	49.0	--	--	--	--	--
120-129	152.8	9.2	--	--	--	--
110-119	282.6	9.6	--	3.6	--	--
100-109	468.6	45.0	--	20.2	--	--
90-99	433.1	107.4	--	42.6	6.5	--
80-89	345.9	127.4	--	133.8	22.5	--
70-79	201.9	278.5	--	247.5	58.4	--
60-69	92.9	303.4	4.8	298.2	191.2	--
50-59	43.8	371.8	--	386.0	297.2	--
40-49	22.3	404.0	1.9	443.4	430.3	1.6
30-39	2.0	214.4	9.6	259.1	475.9	.9
20-29	10.7	141.3	68.9	161.4	334.6	2.0
10-19	--	71.1	106.8	87.3	232.7	--
0-9	--	25.8	1,916.9	25.8	59.6	2,104.4
TOTAL	2,108.9	2,108.9	2,108.9	2,108.9	2,108.9	2,108.9

Table 14.--*Area of commercial forest land, by stocking class of growing-stock trees and stand-size class, Riverborder, Missouri, 1972.*
(Thousand acres)

STOCKING PERCENTAGE	ALL STANDS	SAWTIMBER STANDS	POLETIMBER STANDS	SAPLING AND SEEDLING STANDS	NONSTOCKED AREAS 1/
101 to 133	63.8	45.6	17.3	0.9	--
61 to 100	816.7	383.8	307.2	125.7	--
17 to 60	1,155.9	413.3	433.8	308.8	--
Less than 17	72.5	--	--	--	72.5
ALL CLASSES	2,108.9	842.7	758.3	435.4	72.5

1/ See glossary for stand-size classes (page 3).

Table 15.--*Area of noncommercial forest land, by ownership class, Riverborder, Missouri, 1972*
(Thousand acres)

OWNERSHIP CLASS	ALL AREAS	PRODUCTIVE RESERVED AREAS	UNPRODUCTIVE AREAS
NATIONAL FOREST	0.7	--	0.7
OTHER PUBLIC	16.1	16.1	--
FARMER AND MISCELLANEOUS PRIVATE	31.7	--	31.7
ALL OWNERSHIPS	48.5	16.1	32.4

Table 16.--*Area of noncommercial forest land, by forest type, River-border, Missouri, 1972*
(Thousand acres)

FOREST TYPE	ALL AREAS	PRODUCTIVE RESERVED AREAS	UNPRODUCTIVE AREAS
SHORTLEAF PINE-OAK	0.1	0.1	--
POST-BLACKJACK OAK	35.2	2.8	32.4
BLACK-SCARLET OAK	4.9	4.9	--
WHITE OAK	7.2	7.2	--
OAK-GUM-CYPRESS	.1	.1	--
ELM-ASH-COTTONWOOD	.9	.9	--
MAPLE-BEECH	.1	.1	--
ALL FOREST TYPES	48.5	16.1	32.4

Table 17.--*Number of all live trees on commercial forest land, by species and diameter class, Riverborder, Missouri, 1972*
(Thousand trees)

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)													
		1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS:															
SHORTLEAF PINE	1808	463	989	238	81	--	28	9	--	--	--	--	--	--	--
CYPRESS	255	--	--	--	17	35	15	47	32	44	17	20	16	7	5
EASTERN REDCEDAR	60308	32618	15130	6866	3677	1439	453	83	42	--	--	--	--	--	--
TOTAL SOFTWOODS	62371	33081	16119	7104	3775	1474	496	139	74	44	17	20	16	7	5
HARDWOODS:															
SELECT WHITE OAKS	140196	47846	27231	19126	15949	11949	8499	5115	2459	904	522	257	288	49	2
OTHER WHITE OAKS	98000	31796	25840	17851	11031	6103	2919	1416	541	287	120	38	58	--	--
SELECT RED OAKS	18192	5957	2171	1908	2018	1960	1249	1024	732	562	298	141	146	26	--
RED OAKS	74275	33681	13339	9159	6777	5005	2461	1716	863	555	332	178	178	28	3
OTHER RED OAKS	28881	14158	8117	3280	1584	915	369	227	36	100	61	14	19	1	--
HICKORY A	76082	48203	10967	8613	3959	2016	1177	596	336	130	47	27	6	5	--
HICKORY B	80402	50005	17549	6573	3503	1662	687	226	106	42	19	15	14	1	--
HARD MAPLE	48153	33962	6693	3195	2335	1135	441	209	67	67	19	19	11	--	--
SOFT MAPLE	8421	5997	1094	228	348	281	203	96	57	42	18	9	36	12	--
BEECH	255	--	193	--	--	11	19	7	10	3	3	6	2	1	--
SWEETGUM	835	163	192	131	46	86	97	37	48	29	--	--	4	2	--
TUPELO+BLACKGUM	5935	2273	1897	653	334	319	248	62	97	32	2	10	8	--	--
ASH	51244	28570	11613	4283	3245	1717	1111	321	196	76	22	34	46	10	--
SYCAMORE	5814	2768	1150	500	319	269	216	228	119	86	56	53	44	6	--
COTTONWOOD	3889	2321	176	293	354	162	156	145	84	81	40	17	35	23	2
RIVER BIRCH	1147	250	375	424	16	--	36	--	13	19	8	--	--	6	--
YELLOW-POPLAR	122	--	--	60	19	10	22	4	--	--	3	--	--	4	--
BASSWOOD	536	--	494	--	--	--	24	--	13	--	--	--	5	--	--
BLACK WALNUT	9648	2681	2361	1421	1327	782	406	386	198	58	28	--	--	--	--
BLACK CHERRY	4634	1931	2012	286	144	100	67	70	24	--	--	--	--	--	--
ELM	91781	65213	15435	5978	2783	1191	605	146	171	114	50	29	37	21	8
OTHER HARDWOODS	161181	119057	26282	7175	3738	2154	1241	766	435	153	76	49	54	1	--
NONCOMMERCIAL SPP.	56446	50954	4933	393	166	--	--	--	--	--	--	--	--	--	--
TOTAL HARDWOODS	966069	547786	180114	91530	59995	37827	22253	12797	6605	3340	1724	896	991	196	15
ALL SPECIES	1028440	580867	196233	98634	63770	39301	22749	12936	6679	3384	1741	916	1007	203	20

Table 18.--*Number of growing-stock trees on commercial forest land, by species and diameter class, Riverborder, Missouri, 1972*
(Thousand trees)

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)													
		1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS:															
SHORTLEAF PINE	1808	463	989	238	81	--	28	9	--	--	--	--	--	--	--
CYPRESS	171	--	--	--	17	--	--	31	28	38	17	18	13	7	2
EASTERN REDCEDAR	45748	24638	12891	4550	2452	907	225	65	20	--	--	--	--	--	--
TOTAL SOFTWOODS	47727	25101	13880	4788	2550	907	253	105	48	38	17	18	13	7	2
HARDWOODS:															
SELECT WHITE OAKS	84846	20877	18070	11566	11741	8739	7101	3829	1737	661	289	121	98	17	--
OTHER WHITE OAKS	50419	8644	15339	11875	8038	3788	1540	752	229	135	43	24	12	--	--
SELECT RED OAKS	8993	593	2025	1247	1344	1228	747	680	502	362	106	80	77	2	--
RED OAKS	49699	20001	10024	7138	5187	3645	1472	1050	504	316	196	74	81	11	--
OTHER RED OAKS	13157	6884	3381	1520	854	227	146	44	--	67	25	6	2	1	--
HICKORY A	38845	19490	7819	5767	2783	1297	806	506	199	115	35	19	4	5	--
HICKORY B	30367	13745	8196	3916	2398	1306	476	183	77	32	19	7	12	--	--
HARD MAPLE	21155	13543	3642	1827	1078	667	295	78	14	11	--	--	--	--	--
SOFT MAPLE	4140	2973	557	76	151	105	137	45	51	19	11	6	9	--	--
BEECH	202	--	192	--	--	--	--	--	10	--	--	--	--	--	--
SWEETGUM	663	163	192	85	25	57	60	10	48	22	--	--	1	--	--
TUPELO+BLACKGUM	3496	1284	1212	351	199	237	77	45	70	19	--	--	2	--	--
ASH	16692	8013	2959	2180	1560	944	632	209	94	39	9	16	31	6	--
SYCAMORE	4309	1617	1151	371	230	239	197	196	75	86	44	53	44	6	--
COTTONWOOD	2455	1084	176	176	319	161	135	145	69	82	33	18	35	19	3
RIVER BIRCH	982	250	375	294	16	--	21	--	13	10	--	--	--	3	--
YELLOW-POPLAR	86	--	--	23	19	10	22	4	--	--	4	--	--	4	--
BASSWOOD	532	--	495	--	--	--	24	--	13	--	--	--	--	--	--
BLACK WALNUT	4022	450	1107	502	997	336	254	225	115	17	19	--	--	--	--
BLACK CHERRY	751	--	476	166	--	--	45	51	13	--	--	--	--	--	--
ELM	22904	12718	5594	2464	950	668	364	48	47	30	9	--	6	5	1
OTHER HARDWOODS	38848	22996	8163	2965	1556	1307	892	578	240	89	38	13	11	--	--
TOTAL HARDWOODS	397563	155325	91145	54509	39445	24961	15443	8678	4120	2112	880	437	425	79	4
ALL SPECIES	445290	180426	105025	59297	41995	25868	15696	8783	4168	2150	897	455	438	86	6

Table 19.—*Number of short-log trees on commercial forest land, by species and diameter class, Riverborder, Missouri, 1972*
(Thousand trees)

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS:											
CYPRESS	24	19	--	--	--	--	--	2	3	--	--
EASTERN REDCEDAR	418	302	103	--	13	--	--	--	--	--	--
TOTAL SOFTWOODS	442	321	103	--	13	--	--	2	3	--	--
HARDWOODS:											
SELECT WHITE OAKS	1291	--	415	425	262	59	59	45	22	4	--
OTHER WHITE OAKS	560	--	324	139	47	50	--	--	--	--	--
SELECT RED OAKS	223	--	54	75	15	--	26	17	26	10	--
RED OAKS	471	--	182	147	66	30	17	14	9	5	1
OTHER RED OAKS	147	--	71	58	--	12	--	--	6	--	--
HICKORY A	239	--	120	40	77	2	--	--	--	--	--
HICKORY B	158	--	121	36	--	--	--	--	--	1	--
HARD MAPLE	23	--	--	--	12	--	11	--	--	--	--
SOFT MAPLE	59	--	25	15	--	8	6	--	5	--	--
TUPELO+BLACKGUM	109	--	109	--	--	--	--	--	--	--	--
ASH	181	--	132	32	--	10	4	3	--	--	--
SYCAMORE	23	--	--	--	14	--	9	--	--	--	--
COTTONWOOD	8	--	--	--	--	--	7	--	--	1	--
BLACK WALNUT	148	--	24	68	56	--	--	--	--	--	--
BLACK CHERRY	18	--	--	18	--	--	--	--	--	--	--
ELM	138	--	50	25	17	20	6	5	10	4	1
OTHER HARDWOODS	71	--	11	29	2	12	6	7	3	1	--
TOTAL HARDWOODS	3867	--	1638	1107	568	203	151	91	81	26	2
ALL SPECIES	4309	321	1741	1107	581	203	151	93	84	26	2

Table 20.--*Net volume of growing stock and sawtimber on commercial forest land, by species, Riverborder, Missouri, 1959 and 1972*

SPECIES	GROWING STOCK		SAWTIMBER	
	1959[1/]	1972	1959[1/]	1972
	MILLION CUBIC FEET		MILLION BOARD FEET[2/]	
SOFTWOODS:				
SHORTLEAF PINE	--	1.3	--	1.6
CYPRESS	13.2	7.4	61.4	34.4
EASTERN REDCEDAR	14.3	31.0	11.1	58.2
TOTAL SOFTWOODS	27.5	39.7	72.5	94.2
HARDWOODS:				
SELECT WHITE OAKS	536.8	461.2	1,436.7	1,362.6
OTHER WHITE OAKS	109.8	139.9	143.3	217.6
SELECT RED OAKS	123.9	94.5	527.4	366.6
RED OAKS	143.3	163.3	411.2	436.5
OTHER RED OAKS	27.0	15.3	108.4	41.3
HICKORY A	67.4	77.1	169.1	192.4
HICKORY B	41.1	50.1	63.1	87.6
HARD MAPLE	25.3	23.1	31.7	23.8
SOFT MAPLE	12.1	11.1	25.9	38.0
BEECH	.4	.3	1.6	1.3
SWEETGUM	6.8	4.5	25.6	19.1
TUPELO AND BLACKGUM	7.4	8.7	21.9	24.4
ASH	52.2	45.1	86.2	88.7
SYCAMORE	19.7	34.1	90.3	134.4
COTTONWOOD	10.7	33.6	52.7	159.7
RIVER BIRCH	.5	2.5	1.0	9.8
YELLOW-POPLAR	.2	1.6	.6	4.6
BASSWOOD	.1	.7	--	3.5
BLACK WALNUT	16.8	21.8	44.8	51.7
BLACK CHERRY	1.0	2.6	2.3	8.8
ELM	35.5	26.5	71.3	42.0
OTHER HARDWOODS	73.5	76.5	171.6	232.5
TOTAL HARDWOODS	1,311.5	1,294.1	3,486.7	3,546.9
ALL SPECIES	1,339.0	1,333.8	3,559.2	3,641.1

1/ FIGURES HAVE BEEN ADJUSTED FROM THOSE PUBLISHED PREVIOUSLY FOR 1959 TO CONFORM TO 1972 VOLUMES BECAUSE OF CHANGES IN SURVEY DEFINITIONS AND PROCEDURES.

2/ INTERNATIONAL 1/4-INCH RULE.

Table 21.--*Net volume on commercial forest land for Missouri's River-border Survey Unit and for individual counties within Unit, by species and kind of material, 1972*

ALL COUNTIES

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Shortleaf pine	16.5	9.9	6.6	1.6	0.6	1.0	--
Cypress	94.3	1.0	93.3	34.4	31.7	2.7	39.7
Eastern redcedar	392.7	248.3	144.4	58.2	21.6	36.6	164.4
Total softwoods	503.5	259.2	244.3	94.2	53.9	40.3	204.1
Hardwoods:							
Select white oaks	5,839.5	2,170.4	3,669.1	1,362.6	1,052.2	310.4	1,492.2
Other white oaks	1,771.1	1,204.1	567.0	217.6	108.2	109.4	759.1
Select red oaks	1,197.4	271.4	926.0	366.6	299.5	67.1	370.1
Red oaks	2,067.1	935.0	1,132.1	436.5	295.3	141.2	583.5
Other red oaks	193.1	101.8	91.3	41.3	22.6	18.7	205.4
Hickory A	975.7	485.4	490.3	192.4	151.6	40.8	277.1
Hickory B	633.1	400.0	233.1	87.6	65.3	22.3	168.3
Hard maple	290.6	207.3	83.3	23.8	11.2	12.6	204.0
Soft maple	141.1	38.4	102.7	38.0	38.0	--	74.8
Beech	3.7	--	3.7	1.3	1.3	--	13.6
Sweetgum	57.4	13.5	43.9	19.1	15.3	3.8	21.6
Tupelo and blackgum	112.4	54.4	58.0	24.4	21.5	2.9	57.3
Ash	571.1	303.9	267.2	88.7	73.6	15.1	274.3
Sycamore	430.4	68.8	361.6	134.4	117.9	16.5	33.0
Cottonwood	426.3	50.4	375.9	159.7	152.8	6.9	32.9
River birch	31.9	9.5	22.4	9.8	9.8	--	11.9
Yellow-poplar	20.1	4.0	16.1	4.6	2.8	1.8	1.3
Basswood	8.5	--	8.5	3.5	3.5	--	1.3
Black walnut	275.7	119.6	156.1	51.7	37.8	13.9	128.0
Black cherry	32.2	6.6	25.6	8.8	5.7	3.1	25.8
Elm	334.1	202.0	132.1	42.0	35.0	7.0	353.3
Other hardwoods	967.9	354.0	613.9	232.5	184.5	48.0	383.2
Noncommercial species	--	--	--	--	--	--	10.4
Total hardwoods	16,380.4	7,000.5	9,379.9	3,546.9	2,705.4	841.5	5,482.4
All species	16,883.9	7,259.7	9,624.2	3,641.1	2,759.3	881.8	5,686.5

BOONE COUNTY

Softwoods:							
Shortleaf pine	.3	--	.3	.1	--	.1	--
Eastern redcedar	20.7	13.3	7.4	2.9	1.0	1.9	8.7
Total softwoods	21.0	13.3	7.7	3.0	1.0	2.0	8.7
Hardwoods:							
Select white oaks	276.9	105.1	171.8	64.0	47.6	16.4	75.7
Other white oaks	94.1	65.5	28.6	10.9	5.0	5.9	41.7
Select red oaks	56.8	13.2	43.6	17.1	13.6	3.5	18.5
Red oaks	98.5	47.9	50.6	19.3	12.2	7.1	30.7
Other red oaks	9.5	5.4	4.1	1.8	.8	1.0	10.8
Hickory A	45.2	23.8	21.4	8.2	6.2	2.0	14.2
Hickory B	29.5	19.3	10.2	3.8	2.8	1.0	9.3
Hard maple	14.6	10.3	4.3	1.2	.5	.7	10.8
Soft maple	2.3	.5	1.8	.7	.7	--	2.3
Sweetgum	1.6	--	1.6	.7	.6	.1	.2
Tupelo and blackgum	2.6	1.3	1.3	.5	.5	--	.5
Ash	26.9	14.8	12.1	4.0	3.3	.7	14.1
Sycamore	23.0	3.8	19.2	7.1	6.2	.9	2.0
Cottonwood	20.8	3.3	17.5	7.7	7.5	.2	2.0
River birch	1.2	.4	.8	.4	.4	--	.8
Yellow-poplar	.4	--	.4	.1	.1	--	--
Basswood	.5	--	.5	.2	.2	--	.1
Black walnut	15.1	6.4	8.7	2.9	2.1	.8	6.9
Black cherry	1.7	.3	1.4	.5	.3	.2	1.4
Elm	16.2	9.7	6.5	1.9	1.7	.2	18.7
Other hardwoods	35.0	13.8	21.2	8.5	6.4	2.1	17.9
Noncommercial species	--	--	--	--	--	--	.5
Total hardwoods	772.4	344.8	427.6	161.5	118.7	42.8	279.1
All species	793.4	358.1	435.3	164.5	119.7	44.8	287.8

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

CALLAWAY COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Shortleaf pine	.3	--	.3	.1	--	.1	--
Eastern redcedar	30.6	19.9	10.7	4.3	1.6	2.7	12.5
Total softwoods	30.9	19.9	11.0	4.4	1.6	2.8	12.5
Hardwoods:							
Select white oaks	469.6	180.9	288.7	107.6	79.1	28.5	126.1
Other white oaks	162.6	114.5	48.1	18.4	8.0	10.4	69.9
Select red oaks	96.1	22.9	73.2	28.9	22.9	6.0	30.5
Red oaks	167.0	81.2	85.8	32.7	20.8	11.9	51.1
Other red oaks	16.3	9.3	7.0	3.2	1.4	1.8	18.0
Hickory A	76.2	40.4	35.8	13.7	10.3	3.4	23.7
Hickory B	49.9	33.3	16.6	6.2	4.5	1.7	14.5
Hard maple	24.0	17.1	6.9	2.0	.9	1.1	17.6
Soft maple	3.5	.8	2.7	1.1	1.1	--	3.0
Sweetgum	1.8	--	1.8	.7	.6	.1	.2
Tupelo and blackgum	4.4	2.1	2.3	.9	.9	--	.9
Ash	44.6	24.8	19.8	6.5	5.2	1.3	22.1
Sycamore	34.1	5.5	28.6	10.5	9.2	1.3	3.0
Cottonwood	27.8	3.9	23.9	10.3	10.1	.2	2.2
River birch	1.6	.6	1.0	.4	.4	--	1.2
Yellow-poplar	.7	--	.7	.1	.1	--	--
Basswood	.7	--	.7	.3	.3	--	.1
Black walnut	24.2	10.5	13.7	4.5	3.3	1.2	11.3
Black cherry	2.6	.5	2.1	.7	.4	.3	2.1
Elm	25.4	15.5	9.9	2.9	2.6	.3	28.5
Other hardwoods	42.1	15.8	26.3	10.5	9.0	1.5	26.0
Noncommercial species	--	--	--	--	--	--	.7
Total hardwoods	1,275.2	579.6	695.6	262.1	191.1	71.0	452.7
All species	1,306.1	599.5	706.6	266.5	192.7	73.8	465.2

CAPE GIRARDEAU COUNTY

Softwoods:							
Shortleaf pine	.2	--	.2	.1	--	.1	—
Eastern redcedar	15.5	9.6	5.9	2.4	1.2	1.2	7.1
Total softwoods	15.7	9.6	6.1	2.5	1.2	1.3	7.1
Hardwoods:							
Select white oaks	286.0	100.4	185.6	68.1	55.3	12.8	61.3
Other white oaks	72.2	48.7	23.5	9.0	5.1	3.9	29.6
Select red oaks	51.7	10.9	40.8	15.7	13.0	2.7	15.4
Red oaks	81.7	36.0	45.7	17.3	12.2	5.1	23.6
Other red oaks	7.6	4.0	3.6	1.7	1.0	.7	7.8
Hickory A	40.8	20.3	20.5	7.9	6.4	1.5	11.1
Hickory B	25.8	16.1	9.7	3.6	2.9	.7	6.7
Hard maple	14.5	10.6	3.9	1.1	.5	.6	9.0
Soft maple	1.9	.4	1.5	.6	.6	--	2.0
Sweetgum	1.3	--	1.3	.5	.5	--	.2
Tupelo and blackgum	1.9	.9	1.0	.4	.4	--	.5
Ash	24.5	12.3	12.2	4.0	3.4	.6	11.8
Sycamore	19.3	3.0	16.3	6.0	5.3	.7	1.6
Cottonwood	18.1	3.1	15.0	6.6	6.4	.2	1.7
River birch	1.1	.4	.7	.3	.3	--	.6
Yellow-poplar	.4	--	.4	.1	.1	--	--
Basswood	.4	--	.4	.2	.2	--	--
Black walnut	12.8	5.3	7.5	2.5	2.0	.5	5.6
Black cherry	1.7	.4	1.3	.5	.3	.2	1.1
Elm	13.8	8.5	5.3	1.6	1.4	.2	14.6
Other hardwoods	24.6	8.7	15.9	6.3	5.5	.8	14.5
Noncommercial species	—	--	--	—	--	--	.4
Total hardwoods	702.1	290.0	412.1	154.0	122.8	31.2	219.1
All species	717.8	299.6	418.2	156.5	124.0	32.5	226.2

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

COLE COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Shortleaf pine	0.1	--	0.1	--	--	--	--
Eastern redcedar	17.1	10.6	6.5	2.6	0.6	2.0	8.3
Total softwoods	17.2	10.6	6.6	2.6	.6	2.0	8.3
Hardwoods:							
Select white oaks	186.7	71.7	115.0	42.7	31.4	11.3	54.2
Other white oaks	69.1	48.2	20.9	7.9	3.2	4.7	31.1
Select red oaks	38.7	9.3	29.4	11.5	9.1	2.4	13.2
Red oaks	68.5	33.7	34.8	13.2	7.9	5.3	21.4
Other red oaks	6.5	3.8	2.7	1.2	.5	.7	7.9
Hickory A	30.6	16.5	14.1	5.4	4.0	1.4	10.4
Hickory B	20.0	13.4	6.6	2.4	1.7	.7	6.7
Hard maple	9.3	6.6	2.7	.8	.3	.5	7.1
Soft maple	1.2	.3	.9	.4	.4	--	1.1
Sweetgum	.8	--	.8	.3	.2	.1	.1
Tupelo and blackgum	1.8	.9	.9	.4	.4	--	.4
Ash	16.3	9.0	7.3	2.4	2.0	.4	9.4
Sycamore	13.0	2.5	10.5	3.9	3.1	.8	1.1
Cottonwood	9.5	1.6	7.9	3.4	3.3	.1	.9
River birch	.5	.2	.3	.2	.2	--	.4
Yellow-poplar	.3	--	.3	.1	.1	--	--
Basswood	.3	--	.3	.1	.1	--	--
Black walnut	9.5	4.3	5.2	1.7	1.2	.5	4.9
Black cherry	1.1	.2	.9	.3	.2	.1	.9
Elm	9.8	6.1	3.7	1.1	1.0	.1	11.8
Other hardwoods	24.3	11.3	13.0	5.2	2.9	2.3	11.0
Noncommercial species	--	--	--	--	--	--	.3
Total hardwoods	517.8	239.6	278.2	104.6	73.2	31.4	194.3
All species	535.0	250.2	284.8	107.2	73.8	33.4	202.6

DUNKLIN COUNTY

Softwoods:							
Cypress	24.1	0.2	23.9	8.7	8.3	0.4	7.3
Total softwoods	24.1	.2	23.9	8.7	8.3	.4	7.3
Hardwoods:							
Select white oaks	16.1	7.0	9.1	3.5	3.2	.3	8.2
Other white oaks	3.1	1.5	1.6	.7	.4	.3	2.6
Select red oaks	10.1	2.7	7.4	3.7	3.6	.1	4.3
Red oaks	21.5	6.8	14.7	6.3	5.2	1.1	1.8
Other red oaks	3.5	.7	2.8	1.2	.9	.3	1.9
Hickory A	14.3	4.1	10.2	4.6	4.0	.6	2.5
Hickory B	4.4	2.2	2.2	.9	.6	.3	.4
Hard maple	.2	.1	.1	--	--	--	.4
Soft maple	20.1	5.8	14.3	5.1	5.1	--	7.2
Beech	.1	--	.1	--	--	--	.7
Sweetgum	5.8	2.4	3.4	1.7	1.5	.2	5.2
Tupelo and blackgum	11.3	4.2	7.1	3.2	2.8	.4	10.8
Ash	14.9	8.6	6.3	2.2	1.9	.3	4.6
Sycamore	10.1	1.0	9.1	3.9	3.7	.2	.1
Cottonwood	18.5	.3	18.2	7.4	6.4	1.0	.8
River birch	2.3	.8	1.5	.7	.7	--	--
Yellow-poplar	.5	.1	.4	.2	--	.2	--
Black walnut	.7	.2	.5	.2	--	.2	--
Black cherry	--	--	--	--	--	--	.1
Elm	7.1	4.1	3.0	1.2	.8	.4	6.1
Other hardwoods	81.1	25.6	55.5	19.8	16.7	3.1	17.6
Noncommercial species	--	--	--	--	--	--	.2
Total hardwoods	245.7	78.2	167.5	66.5	57.5	9.0	75.5
All species	269.8	78.4	191.4	75.2	65.8	9.4	82.8

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

FRANKLIN COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1]			Thousand cords
Softwoods:							
Shortleaf pine	4.0	2.1	1.9	.4	.3	.1	--
Eastern redcedar	50.1	31.5	18.6	7.6	3.2	4.4	20.8
Total softwoods	54.1	33.6	20.5	8.0	3.5	4.5	20.8
Hardwoods:							
Select white oaks	761.8	274.9	486.9	179.5	143.0	36.5	176.2
Other white oaks	197.7	131.1	66.6	25.5	14.3	11.2	81.7
Select red oaks	144.8	31.9	112.9	44.0	36.1	7.9	43.9
Red oaks	232.6	101.6	131.0	49.9	35.3	14.6	67.5
Other red oaks	20.5	11.0	9.5	4.4	2.6	1.8	22.2
Hickory A	110.0	54.7	55.3	21.3	17.3	4.0	30.6
Hickory B	71.0	43.9	27.1	10.0	7.9	2.1	19.3
Hard maple	37.7	27.2	10.5	3.0	1.4	1.6	24.8
Soft maple	3.7	.8	2.9	1.1	1.1	--	4.1
Sweetgum	2.6	--	2.6	1.0	.8	.2	.2
Tupelo and blackgum	6.5	2.7	3.8	1.5	1.5	--	1.5
Ash	61.0	30.4	30.6	10.0	8.5	1.5	29.8
Sycamore	42.5	6.7	35.8	13.1	11.4	1.7	3.4
Cottonwood	30.0	4.7	25.3	11.0	10.8	.2	2.7
River birch	3.1	.6	2.5	1.0	1.0	--	1.4
Yellow-poplar	1.1	--	1.1	.2	.2	--	--
Basswood	1.0	--	1.0	.4	.4	--	.1
Black walnut	32.1	13.9	18.2	5.9	4.4	1.5	15.1
Black cherry	4.3	.9	3.4	1.2	.9	.3	3.0
Elm	33.3	20.9	12.4	3.8	3.3	.5	35.4
Other hardwoods	56.4	23.7	32.7	12.9	10.2	2.7	34.0
Noncommercial species	--	--	--	--	--	--	.9
Total hardwoods	1,853.7	781.6	1,072.1	400.7	312.4	88.3	597.8
All species	1,907.8	815.2	1,092.6	408.7	315.9	92.8	618.6

GASCONADE COUNTY

Softwoods:							
Shortleaf pine	.2	--	.2	.1	--	.1	--
Eastern redcedar	28.9	18.6	10.3	4.1	1.6	2.5	10.0
Total softwoods	29.1	18.6	10.5	4.2	1.6	2.6	10.0
Hardwoods:							
Select white oaks	475.3	179.0	296.3	109.5	83.4	26.1	118.2
Other white oaks	156.9	109.6	47.3	18.0	8.3	9.7	64.9
Select red oaks	93.1	21.4	71.7	27.9	22.2	5.7	28.6
Red oaks	155.8	73.7	82.1	31.1	20.7	10.4	45.9
Other red oaks	14.4	8.0	6.4	2.9	1.4	1.5	15.7
Hickory A	71.8	37.4	34.4	13.2	10.1	3.1	21.7
Hickory B	47.5	31.4	16.1	6.0	4.4	1.6	13.3
Hard maple	22.7	16.4	6.3	1.8	.8	1.0	15.8
Soft maple	2.0	.5	1.5	.6	.6	--	2.4
Sweetgum	1.7	--	1.7	.7	.6	.1	.2
Tupelo and blackgum	4.0	1.7	2.3	.9	.9	--	.9
Ash	38.0	20.0	18.0	5.9	4.9	1.0	19.5
Sycamore	24.0	4.0	20.0	7.2	6.2	1.0	1.9
Cottonwood	15.1	2.0	13.1	5.7	5.6	.1	1.6
River birch	1.6	.3	1.3	.5	.5	--	.7
Yellow-poplar	.7	--	.7	.1	.1	--	--
Basswood	.5	--	.5	.2	.2	--	.1
Black walnut	19.9	9.1	10.8	3.4	2.5	.9	10.6
Black cherry	2.6	.6	2.0	.7	.5	.2	1.7
Elm	20.0	13.1	6.9	2.1	1.8	.3	22.4
Other hardwoods	33.3	14.7	18.6	7.4	5.6	1.8	20.9
Noncommercial species	--	--	--	--	--	--	.8
Total hardwoods	1,200.9	542.9	658.0	245.8	181.3	64.5	407.8
All species	1,230.0	561.5	668.5	250.0	182.9	67.1	417.8

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

HOWARD COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet 1/			Thousand cords
Softwoods:							
Shortleaf pine	.2	--	.2	.1	--	.1	--
Eastern redcedar	13.1	8.4	4.7	1.9	.5	1.4	5.8
Total softwoods	13.3	8.4	4.9	2.0	.5	1.5	5.8
Hardwoods:							
Select white oaks	149.3	55.6	93.7	34.9	26.3	8.6	42.1
Other white oaks	46.9	32.0	14.9	5.7	2.7	3.0	21.7
Select red oaks	31.4	7.2	24.2	9.5	7.7	1.8	10.7
Red oaks	53.8	25.8	28.0	10.8	6.7	4.1	16.9
Other red oaks	5.0	2.9	2.1	1.0	.5	.5	6.1
Hickory A	24.3	12.6	11.7	4.9	3.9	1.0	7.8
Hickory B	15.7	10.0	5.7	2.1	1.6	.5	5.5
Hard maple	8.2	5.7	2.5	.7	.3	.4	6.1
Soft maple	1.2	.2	1.0	.4	.4	--	1.2
Sweetgum	.8	--	.8	.3	.2	.1	.1
Tupelo and blackgum	1.5	.7	.8	.3	.3	--	.3
Ash	14.3	7.8	6.5	2.2	1.8	.4	8.2
Sycamore	13.2	2.4	10.8	4.0	3.3	.7	1.1
Cottonwood	10.5	1.7	8.8	3.8	3.7	.1	1.1
River birch	.6	.2	.4	.2	.2	--	.4
Yellow-poplar	.2	--	.2	--	--	--	--
Basswood	.3	--	.3	.1	.1	--	--
Black walnut	8.4	3.6	4.8	1.6	1.2	.4	3.8
Black cherry	1.0	.2	.8	.3	.2	.1	.8
Elm	8.9	5.3	3.6	1.1	.9	.2	10.6
Other hardwoods	20.2	8.3	11.9	4.7	3.3	1.4	10.0
Noncommercial species	--	--	--	--	--	--	.2
Total hardwoods	415.7	182.2	233.5	88.2	64.9	23.3	154.7
All species	429.0	190.6	238.4	90.2	65.4	24.8	160.5

JEFFERSON COUNTY

Softwoods:							
Shortleaf pine	.3	--	.3	.1	--	.1	--
Eastern redcedar	48.7	30.6	18.1	7.1	2.5	4.6	20.7
Total softwoods	49.0	30.6	18.4	7.2	2.5	4.7	20.7
Hardwoods:							
Select white oaks	673.2	245.8	427.4	157.5	123.3	34.2	165.2
Other white oaks	191.1	129.6	61.5	23.6	12.1	11.5	80.7
Select red oaks	131.3	29.6	101.7	39.8	32.4	7.4	40.9
Red oaks	212.7	96.3	116.4	44.3	30.0	14.3	63.0
Other red oaks	18.7	10.4	8.3	3.5	2.2	1.6	21.9
Hickory A	98.1	49.8	48.3	18.6	14.8	3.8	29.3
Hickory B	64.1	40.4	23.7	8.7	6.6	2.1	18.8
Hard maple	32.3	23.3	9.0	2.5	1.2	1.3	22.3
Soft maple	2.4	.5	1.9	.8	.8	--	2.8
Sweetgum	2.0	--	2.0	.7	.5	.2	.1
Tupelo and blackgum	5.6	2.5	3.1	1.2	1.2	--	1.2
Ash	49.9	24.8	25.1	8.1	6.9	1.2	26.4
Sycamore	32.1	5.6	26.5	9.7	8.2	1.5	2.7
Cottonwood	15.5	2.0	13.5	5.8	5.7	.1	1.7
River birch	2.1	.4	1.7	.8	.8	--	1.0
Yellow-poplar	.9	--	.9	.1	.1	--	--
Basswood	.8	--	.8	.3	.3	--	.1
Black walnut	27.3	12.3	15.0	4.8	3.4	1.4	1.3
Black cherry	3.5	.8	2.7	.9	.6	.3	.1
Elm	26.9	17.0	9.9	3.4	2.6	.8	30.2
Other hardwoods	35.6	16.1	19.5	7.6	6.3	1.3	27.3
Noncommercial species	--	--	--	--	--	--	.9
Total hardwoods	1,626.1	712.2	913.9	341.4	260.0	82.7	553.1
All species	1,675.1	737.8	937.3	349.9	262.5	87.4	573.8

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1]			Thousand cords
MISSISSIPPI COUNTY							
Softwoods:							
Cypress	11.0	0.2	10.8	4.1	3.5	0.6	5.0
Total softwoods	11.0	.2	10.8	4.1	3.5	.6	5.0
Hardwoods:							
Select white oaks	7.4	3.8	3.6	1.5	1.3	.2	4.4
Other white oaks	1.7	1.1	.6	.3	--	.3	.6
Select red oaks	2.0	1.1	.9	.5	.5	--	1.0
Red oaks	5.2	2.3	2.9	1.3	.9	.4	.5
Other red oaks	2.0	.6	1.4	.6	.5	.1	1.5
Hickory A	4.8	1.0	3.8	1.9	.8	1.1	2.6
Hickory B	1.0	.1	.9	.3	.1	.2	.2
Hard maple	--	--	--	--	--	--	.2
Soft maple	18.4	5.2	13.2	4.7	4.7	--	5.9
Sweetgum	2.7	1.2	1.5	.7	.5	.2	.6
Tupelo and blackgum	7.0	3.9	3.1	1.4	.9	.5	5.3
Ash	12.9	6.9	6.0	2.1	1.7	.4	2.8
Sycamore	5.4	.8	4.6	1.7	1.4	.3	.1
Cottonwood	24.4	.2	24.2	9.4	8.7	.7	.7
River birch	1.4	.4	1.0	.4	.4	--	--
Black walnut	.8	.4	.4	.2	--	.2	--
Black cherry	--	--	--	--	--	--	.1
Elm	6.4	3.7	2.7	1.0	.6	.4	4.2
Other hardwoods	79.1	25.2	53.9	19.1	15.0	4.1	11.5
Noncommercial species	--	--	--	--	--	--	.4
Total hardwoods	182.6	57.9	124.7	47.1	38.0	9.1	42.6
All species	193.6	58.1	135.5	51.2	41.5	9.7	47.6
MONITEAU COUNTY							
Softwoods:							
Shortleaf pine	0.2	--	0.2	--	--	--	--
Eastern redcedar	12.4	8.3	4.1	1.7	0.4	1.3	5.2
Total softwoods	12.6	8.3	4.3	1.7	.4	1.3	5.2
Hardwoods:							
Select white oaks	123.6	49.0	74.6	28.1	19.5	8.6	40.5
Other white oaks	50.8	36.3	14.5	5.5	1.9	3.6	23.9
Select red oaks	28.5	7.1	21.4	8.7	6.8	1.9	9.6
Red oaks	51.5	26.2	25.3	9.7	5.5	4.2	17.0
Other red oaks	5.0	3.1	1.9	.9	.3	.6	6.3
Hickory A	21.7	12.1	9.6	3.7	2.6	1.1	7.9
Hickory B	14.6	10.0	4.6	1.7	1.1	.6	5.5
Hard maple	6.5	4.4	2.1	.6	.2	.4	5.2
Soft maple	.8	.2	.6	.2	.2	--	.6
Sweetgum	.3	--	.3	.1	--	.1	--
Tupelo and blackgum	1.5	.7	.8	.4	.4	--	.2
Ash	11.7	6.9	4.8	1.5	1.2	.3	7.0
Sycamore	8.7	1.7	7.0	2.6	2.1	.5	.8
Cottonwood	4.5	.5	4.0	1.7	1.6	.1	.4
River birch	.4	.1	.3	.1	.1	--	.4
Yellow-poplar	.2	--	.2	--	--	--	--
Basswood	.2	--	.2	.1	.1	--	.1
Black walnut	7.1	3.3	3.8	1.2	.7	.5	3.7
Black cherry	.7	.1	.6	.2	.1	.1	.8
Elm	6.8	4.2	2.6	.8	.7	.1	9.0
Other hardwoods	11.4	5.4	6.0	2.4	1.7	.7	7.8
Noncommercial species	--	--	--	--	--	--	.2
Total hardwoods	356.5	171.3	185.2	70.2	46.8	23.4	146.9
All species	369.1	179.6	189.5	71.9	47.2	24.7	152.1

[1] International 1/4-inch rule.

(Table 21 cont. on next page)

MONTGOMERY COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Shortleaf pine	0.2	--	0.2	--	--	--	--
Eastern redcedar	18.1	10.9	7.2	3.0	1.0	2.0	8.3
Total softwoods	18.3	10.9	7.4	3.0	1.0	2.0	8.3
Hardwoods:							
Select white oaks	250.1	96.4	153.7	57.5	42.4	15.1	68.7
Other white oaks	92.8	64.8	28.0	10.7	4.6	6.1	40.0
Select red oaks	52.3	12.7	39.6	15.7	12.6	3.1	16.7
Red oaks	93.0	45.2	47.8	18.1	11.4	6.7	28.4
Other red oaks	9.5	5.3	4.2	1.9	.8	1.1	10.4
Hickory A	43.1	23.0	20.1	7.7	5.9	1.8	13.3
Hickory B	27.5	18.3	9.2	3.4	2.5	.9	7.7
Hard maple	13.5	9.5	4.0	1.1	.5	.6	10.1
Soft maple	2.9	.6	2.3	.9	.9	--	2.7
Sweetgum	1.8	--	1.8	.8	.8	--	.2
Tupelo and blackgum	2.4	1.2	1.2	.5	.5	--	.5
Ash	27.7	15.4	12.3	4.1	3.3	.8	13.2
Sycamore	26.1	3.9	22.2	8.2	7.5	.7	2.2
Cottonwood	28.4	4.7	23.7	10.4	10.2	.2	2.4
River birch	1.1	.5	.6	.3	.3	--	.7
Yellow-poplar	.4	--	.4	.1	.1	--	--
Basswood	.5	--	.5	.2	.2	--	.1
Black walnut	15.6	6.6	9.0	3.1	2.4	.7	6.4
Black cherry	1.5	.3	1.2	.4	.2	.2	1.3
Elm	17.8	10.4	7.4	2.2	1.9	.3	19.2
Other hardwoods	34.5	11.5	23.0	9.3	8.2	1.1	18.4
Noncommercial species	--	--	--	--	--	--	.5
Total hardwoods	742.5	330.3	412.2	156.6	117.2	39.4	263.1
All species	760.8	341.2	419.6	159.6	118.2	41.4	271.4

NEW MADRID COUNTY

Softwoods:							
Cypress	12.4	.2	12.2	4.5	4.1	.4	4.8
Total softwoods	12.4	.2	12.2	4.5	4.1	.4	4.8
Hardwoods:							
Select white oaks	9.2	4.5	4.7	1.8	1.8	--	4.6
Other white oaks	1.7	.9	.8	.4	--	.4	.5
Select red oaks	2.8	1.2	1.6	.8	.8	--	1.6
Red oaks	6.1	2.9	3.2	1.4	1.0	.4	.6
Other red oaks	2.5	.5	2.0	.9	.5	.4	1.3
Hickory A	6.4	1.6	4.8	2.2	1.2	1.0	3.1
Hickory B	1.1	.2	.9	.3	.1	.2	.2
Hard maple	--	--	--	--	--	--	.2
Soft maple	19.6	5.8	13.8	5.0	5.0	--	6.7
Sweetgum	3.4	1.4	2.0	.9	.7	.2	1.0
Tupelo and blackgum	6.2	2.9	3.3	1.4	1.0	.4	5.1
Ash	13.4	7.1	6.3	2.2	1.9	.3	3.4
Sycamore	7.4	1.0	6.4	2.5	2.1	.4	.2
Cottonwood	24.4	.3	24.1	9.5	8.3	1.2	.8
River birch	2.1	.7	1.4	.6	.6	--	--
Black walnut	.6	.3	.3	.1	--	.1	--
Elm	8.2	5.0	3.2	1.2	.6	.6	5.6
Other hardwoods	83.4	26.9	56.5	20.2	16.3	3.9	15.3
Noncommercial species	--	--	--	--	--	--	.4
Total hardwoods	198.5	63.2	135.3	51.4	41.9	9.5	50.6
All species	210.9	63.4	147.5	55.9	46.0	9.9	55.4

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

OSAGE COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1]			Thousand cords
Softwoods:							
Shortleaf pine	0.2	--	0.2	--	--	--	--
Eastern redcedar	35.7	23.2	12.5	5.0	1.5	3.5	13.9
Total softwoods	35.9	23.2	12.7	5.0	1.5	3.5	13.9
Hardwoods:							
Select white oaks	431.5	164.8	266.7	99.4	73.7	25.7	123.7
Other white oaks	156.0	108.7	47.3	18.0	7.7	10.3	68.8
Select red oaks	92.5	22.2	70.3	28.2	22.6	5.6	30.7
Red oaks	159.4	78.2	81.2	31.1	19.3	11.8	49.5
Other red oaks	14.8	8.5	6.3	2.8	1.2	1.6	18.2
Hickory A	70.3	37.4	32.9	12.6	9.4	3.2	23.1
Hickory B	46.7	30.7	16.0	5.9	4.2	1.7	15.8
Hard maple	21.4	15.1	6.3	1.8	.8	1.0	16.8
Soft maple	2.9	.6	2.3	.9	.9	--	2.8
Sweetgum	2.2	--	2.2	.9	.7	.2	.2
Tupelo and blackgum	4.6	2.2	2.4	1.0	1.0	--	.8
Ash	38.1	20.6	17.5	5.7	4.7	1.0	20.4
Sycamore	29.8	5.0	24.8	9.1	7.9	1.2	2.6
Cottonwood	23.1	3.4	19.7	8.6	8.4	.2	2.1
River birch	1.5	.5	1.0	.5	.5	--	.9
Yellow-poplar	.6	--	.6	.1	.1	--	--
Basswood	.7	--	.7	.3	.3	--	.1
Black walnut	22.1	9.8	12.3	4.1	2.9	1.2	10.9
Black cherry	2.3	.5	1.8	.6	.4	.2	2.0
Elm	23.0	13.8	9.2	2.7	2.3	.4	26.8
Other hardwoods	40.4	16.5	23.9	9.5	7.6	1.9	24.2
Noncommercial species	--	--	--	--	--	--	.7
Total hardwoods	1,183.9	538.5	645.4	243.8	176.6	67.2	441.1
All species	1,219.8	561.7	658.1	248.8	178.1	70.7	455.0

PEMISCOT COUNTY

Softwoods:							
Cypress	11.9	.1	11.8	4.3	4.1	.2	5.8
Total softwoods	11.9	.1	11.8	4.3	4.1	.2	5.8
Hardwoods:							
Select white oaks	9.6	5.7	3.9	1.5	1.3	.2	2.4
Other white oaks	.7	.5	.2	.1	--	.1	.2
Select red oaks	3.7	2.0	1.7	.8	.8	--	1.2
Red oaks	5.8	2.4	3.4	1.5	1.3	.2	.5
Other red oaks	1.9	.5	1.4	.6	.5	.1	.6
Hickory A	6.4	1.7	4.7	2.2	1.2	1.0	2.4
Hickory B	1.9	1.2	.7	.3	.1	.2	.3
Hard maple	--	--	--	--	--	--	.2
Soft maple	15.9	4.5	11.4	4.1	4.1	--	5.4
Sweetgum	3.0	1.4	1.6	.8	.6	.2	1.4
Tupelo and blackgum	5.7	2.5	3.2	1.4	1.2	.2	4.6
Ash	11.0	5.9	5.1	1.8	1.5	.3	3.0
Sycamore	6.1	.8	5.3	2.0	1.7	.3	.2
Cottonwood	20.7	.2	20.5	8.0	7.4	.6	.6
River birch	1.2	.3	.9	.4	.4	--	--
Yellow-poplar	1.6	.2	1.4	.5	--	.5	--
Black walnut	.6	.3	.3	.1	--	.1	--
Black cherry	--	--	--	--	--	--	.1
Elm	6.9	4.2	2.7	1.0	.5	.5	4.4
Other hardwoods	62.3	19.0	43.3	15.4	13.3	2.1	11.2
Noncommercial species	--	--	--	--	--	--	.3
Total hardwoods	165.0	53.3	111.7	42.5	35.9	6.6	39.0
All species	176.9	53.4	123.5	46.8	40.0	6.8	44.8

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

PERRY COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1]			Thousand cords
Softwoods:							
Shortleaf pine	1.2	.9	.3	.1	--	.1	--
Eastern redcedar	18.9	11.9	7.0	2.9	1.3	1.6	7.7
Total softwoods	20.1	12.8	7.3	3.0	1.3	1.7	7.7
Hardwoods:							
Select white oaks	325.3	117.7	207.6	76.4	60.3	16.1	76.2
Other white oaks	88.7	59.5	29.2	11.2	6.1	5.1	37.1
Select red oaks	62.4	13.9	48.5	19.0	15.6	3.4	19.0
Red oaks	101.6	45.3	56.3	21.4	14.8	6.6	29.8
Other red oaks	9.0	4.9	4.1	1.9	1.1	.8	.4
Hickory A	47.8	24.1	23.7	9.1	7.3	1.8	13.5
Hickory B	31.2	19.8	11.4	4.2	3.3	.9	8.5
Hard maple	16.2	11.7	4.5	1.3	.6	.7	10.8
Soft maple	1.6	.3	1.3	.5	.5	--	1.9
Sweetgum	1.3	--	1.3	.5	.4	.1	.1
Tupelo and blackgum	3.3	1.9	1.4	.6	.6	--	.6
Ash	26.3	13.2	13.1	4.3	3.6	.7	13.3
Sycamore	19.0	3.2	15.8	5.8	5.0	.8	1.8
Cottonwood	14.6	2.6	12.0	5.3	5.2	.1	1.5
River birch	1.3	.3	1.0	.4	.4	—	.6
Yellow-poplar	.5	--	.5	.1	.1	—	--
Basswood	.4	--	.4	.2	.2	—	.1
Black walnut	14.2	6.3	7.9	2.6	1.9	.7	6.7
Black cherry	1.9	.4	1.5	.5	.3	.2	1.4
Elm	14.6	9.2	5.4	1.6	1.4	.2	16.3
Other hardwoods	29.5	12.9	16.6	4.5	4.6	1.9	15.7
Noncommercial species	--	--	--	—	--	--	.4
Total hardwoods	810.7	347.2	463.5	173.4	133.3	40.1	264.8
All species	830.8	360.0	470.8	176.4	134.6	41.8	272.5

ST. CHARLES COUNTY

Softwoods:							
Shortleaf pine	.3	--	.3	--	--	--	--
Eastern redcedar	15.0	8.9	6.1	2.7	1.5	1.2	7.4
Total softwoods	15.3	8.9	6.4	2.7	1.5	1.2	7.4
Hardwoods:							
Select white oaks	270.2	95.6	174.6	64.7	51.8	12.9	56.9
Other white oaks	60.4	39.0	21.4	8.2	5.2	3.0	24.4
Select red oaks	50.0	11.0	39.0	15.2	12.7	2.5	14.2
Red oaks	77.0	34.3	42.7	16.2	11.5	4.7	22.0
Other red oaks	7.5	3.8	3.7	1.7	.9	.8	7.3
Hickory A	40.7	19.9	20.8	8.0	6.6	1.4	10.5
Hickory B	25.4	15.1	10.3	3.9	3.2	.7	5.9
Hard maple	15.3	11.1	4.2	1.2	.7	.5	9.9
Soft maple	4.2	.7	3.5	1.3	1.3	--	1.4
Sweetgum	2.9	--	2.9	1.3	1.3	--	.3
Tupelo and blackgum	1.9	1.0	.9	.3	.3	--	.4
Ash	30.9	15.9	15.0	5.2	4.3	.9	13.2
Sycamore	35.3	4.9	30.4	11.3	10.5	.8	2.8
Cottonwood	45.8	8.2	37.6	16.8	16.5	.3	4.0
River birch	1.9	.7	1.2	.6	.6	--	.8
Yellow-poplar	.3	--	.3	.1	.1	--	--
Basswood	.7	--	.7	.3	.3	--	.1
Black walnut	17.0	6.3	10.7	3.8	3.3	.5	5.3
Black cherry	1.8	.3	1.5	.5	.3	.2	1.4
Elm	21.0	11.6	9.4	2.7	2.5	.2	21.2
Other hardwoods	61.1	21.0	40.1	16.2	12.5	3.7	23.1
Noncommercial species	--	--	--	--	--	--	.5
Total hardwoods	771.3	300.4	470.9	179.5	146.4	33.1	228.8
All species	786.6	309.3	477.3	182.2	147.9	34.3	236.2

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

ST. LOUIS COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1]			Thousand cords
Softwoods:							
Shortleaf pine	.3	--	.3	.1	--	.1	--
Eastern redcedar	15.6	10.0	5.6	2.2	.9	1.3	6.1
Total softwoods	15.9	10.0	5.9	2.3	.9	1.4	6.1
Hardwoods:							
Select white oaks	172.5	61.5	111.0	41.2	32.5	8.7	42.9
Other white oaks	45.9	30.0	15.9	6.1	3.5	2.6	19.9
Select red oaks	34.8	7.5	27.3	10.7	8.8	1.9	10.5
Red oaks	57.2	25.5	31.7	12.1	8.3	3.8	17.4
Other red oaks	5.6	3.0	2.6	1.2	.7	.5	6.1
Hickory A	27.9	14.0	13.9	5.3	4.3	1.0	8.0
Hickory B	17.7	10.8	6.9	2.6	2.1	.5	5.4
Hard maple	10.1	7.1	3.0	.9	.4	.5	6.7
Soft maple	2.1	.4	1.7	.7	.7	--	1.9
Sweetgum	1.2	--	1.2	.5	.5	--	.2
Tupelo and blackgum	1.6	.8	.8	.3	.3	--	.3
Ash	19.0	10.1	8.9	3.0	2.4	.6	9.1
Sycamore	18.6	2.6	16.0	5.9	5.3	.6	1.6
Cottonwood	20.0	3.3	16.7	7.3	7.1	.2	1.7
River birch	1.1	.4	.7	.3	.3	--	.6
Yellow-poplar	.2	--	.2	--	--	--	--
Basswood	.4	--	.4	.2	.2	--	.1
Black walnut	10.7	4.2	6.5	2.3	1.8	.5	4.0
Black cherry	1.2	.2	1.0	.3	.2	.1	1.0
Elm	12.1	6.8	5.3	1.5	1.3	.2	13.1
Other hardwoods	24.9	8.3	16.6	6.7	5.9	.8	13.3
Noncommercial species	--	--	--	--	--	--	.3
Total hardwoods	484.8	196.5	288.3	109.1	86.6	22.5	164.1
All species	500.7	206.5	294.2	111.4	87.5	23.9	170.2

STE. GENEVIEVE COUNTY

Softwoods:							
Shortleaf pine	8.3	6.9	1.4	.3	.3	--	--
Eastern redcedar	27.2	18.0	9.2	3.7	1.3	2.4	10.4
Total softwoods	35.5	24.9	10.6	4.0	1.6	2.4	10.4
Hardwoods:							
Select white oaks	435.7	163.8	271.9	101.0	75.9	25.1	112.4
Other white oaks	144.7	101.4	43.3	16.6	7.3	9.3	61.2
Select red oaks	88.7	21.1	67.6	27.0	21.6	5.4	27.1
Red oaks	151.2	70.0	81.2	30.9	19.7	11.2	45.3
Other red oaks	13.7	8.0	5.7	2.6	1.3	1.3	15.5
Hickory A	67.9	36.8	31.1	12.0	9.1	2.9	20.5
Hickory B	47.2	32.4	14.8	5.5	4.0	1.5	12.9
Hard maple	21.0	15.0	6.0	1.7	.8	.9	14.9
Soft maple	1.5	.3	1.2	.5	.5	--	1.6
Sweetgum	1.0	--	1.0	.3	.2	.1	.1
Tupelo and blackgum	8.2	5.3	2.9	1.1	1.1	--	.9
Ash	32.9	17.5	15.4	5.0	4.1	.9	17.8
Sycamore	19.9	3.6	16.3	5.9	4.9	1.0	1.8
Cottonwood	7.4	.6	6.8	2.8	2.7	.1	.8
River birch	1.1	.2	.9	.3	.3	--	.7
Yellow-poplar	.6	--	.6	.1	.1	--	--
Basswood	.5	--	.5	.2	.2	--	.1
Black walnut	18.4	8.7	9.7	3.0	2.0	1.0	9.9
Black cherry	2.2	.5	1.7	.6	.4	.2	1.7
Elm	17.9	11.4	6.5	2.0	1.6	.4	20.9
Other hardwoods	22.9	11.3	11.6	4.5	3.5	1.0	18.6
Noncommercial species	--	--	--	--	--	--	.6
Total hardwoods	1,104.6	507.9	596.7	223.6	161.3	62.3	385.3
All species	1,140.1	532.8	607.3	227.6	162.9	64.7	395.7

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

SCOTT COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands	
	Thousand cords			Million board feet[1/]			Thousand cords
Softwoods:							
Cypress	5.9	.1	5.8	2.2	1.9	.3	4.5
Total softwoods	5.9	.1	5.8	2.2	1.9	.3	4.5
Hardwoods:							
Select white oaks	45.2	15.5	29.7	12.0	11.0	1.0	10.8
Other white oaks	8.7	2.3	6.4	2.6	2.2	.4	4.1
Select red oaks	17.2	1.6	15.6	6.4	5.9	.5	2.5
Red oaks	46.2	13.5	32.7	13.8	11.3	2.5	5.2
Other red oaks	2.0	.5	1.5	.6	.6	--	.3
Hickory A	23.3	8.6	14.7	6.2	5.7	.5	1.4
Hickory B	19.6	10.5	9.1	3.8	2.9	.9	.7
Hard maple	1.6	.9	.7	.2	.2	--	.8
Soft maple	6.5	2.2	4.3	1.6	1.6	--	2.7
Beech	1.4	--	1.4	.5	.5	--	4.5
Sweetgum	4.4	1.9	2.5	1.2	.8	.4	2.2
Tupelo and blackgum	6.6	3.7	2.9	1.3	.9	.4	4.7
Ash	5.6	3.6	2.0	.7	.5	.2	2.5
Sycamore	3.4	.8	2.6	1.1	1.0	.1	--
Cottonwood	5.7	.1	5.6	2.2	2.0	.2	.2
River birch	.5	.2	.3	.1	.1	--	--
Yellow-poplar	4.3	1.5	2.8	1.1	.6	.5	.5
Black walnut	.3	.1	.2	.1	--	.1	--
Black cherry	--	--	--	--	--	--	.1
Elm	6.2	3.4	2.8	1.3	1.1	.2	3.9
Other hardwoods	26.5	8.9	17.6	6.3	4.7	1.6	4.7
Noncommercial species	--	--	--	--	--	--	.1
Total hardwoods	235.2	79.8	155.4	63.1	53.6	9.5	51.9
All species	241.1	79.9	161.2	65.3	55.5	9.8	56.4
STODDARD COUNTY							
Softwoods:							
Cypress	29.0	.2	28.8	10.6	9.8	.8	12.3
Total softwoods	29.0	.2	28.8	10.6	9.8	.8	12.3
Hardwoods:							
Select white oaks	88.2	32.9	55.3	22.4	20.1	2.3	31.1
Other white oaks	18.6	5.8	12.8	5.3	4.0	1.3	10.5
Select red oaks	35.8	4.1	31.7	13.6	12.4	1.2	8.4
Red oaks	103.9	32.5	71.4	30.1	22.9	7.2	11.2
Other red oaks	6.7	1.6	5.1	2.1	1.7	.4	3.8
Hickory A	48.5	17.4	31.1	13.6	12.6	1.0	3.1
Hickory B	34.8	17.7	17.1	7.1	5.0	2.1	1.2
Hard maple	2.7	1.5	1.2	.4	.4	--	1.5
Soft maple	23.7	7.3	16.4	6.0	6.0	--	9.5
Beech	2.2	--	2.2	.8	.8	--	8.4
Sweetgum	12.9	5.2	7.7	3.7	2.6	1.1	8.4
Tupelo and blackgum	20.8	9.9	10.9	4.8	3.8	1.0	16.3
Ash	18.4	11.5	6.9	2.5	2.1	.4	6.9
Sycamore	12.6	1.9	10.7	4.6	4.5	.1	.1
Cottonwood	18.3	.3	18.0	7.3	6.6	.7	.8
River birch	2.6	.8	1.8	.8	.8	--	--
Yellow-poplar	5.7	2.2	3.5	1.4	.8	.6	.8
Black walnut	.7	.2	.5	.2	--	.2	.6
Black cherry	--	--	--	--	--	--	.8
Elm	12.8	6.7	6.1	2.9	2.4	.5	10.0
Other hardwoods	95.5	31.5	64.0	23.0	17.7	5.3	19.8
Noncommercial species	--	--	--	--	--	--	.5
Total hardwoods	565.4	191.0	374.4	152.6	127.2	25.4	153.7
All species	594.4	191.2	403.2	163.2	137.0	26.2	166.0

1/ International 1/4-inch rule.

(Table 21 cont. on next page)

(Table 21 cont.)

WARREN COUNTY

Species	Growing stock			Sawtimber			Rough and rotten trees
	Total	Poletimber trees	Sawtimber trees	Total	In sawtimber stands	Other stands 1/	
	Thousand cords			Million board feet			Thousand cords
Softwoods:							
Shortleaf pine	.2	--	.2	.1	--	.1	--
Eastern redcedar	25.1	14.6	10.5	4.1	1.5	2.6	11.5
Total softwoods	25.3	14.6	10.7	4.2	1.5	2.7	11.5
Hardwoods:							
Select white oaks	376.1	138.8	237.3	87.8	68.0	19.8	90.4
Other white oaks	106.7	73.1	33.6	12.9	6.6	6.3	44.0
Select red oaks	72.7	16.8	55.9	21.9	17.8	4.1	21.6
Red oaks	116.9	53.7	63.2	24.0	16.4	7.6	34.2
Other red oaks	10.9	6.0	4.9	2.3	1.2	1.1	12.0
Hickory A	55.6	28.2	27.4	10.5	8.3	2.2	16.4
Hickory B	36.5	23.2	13.3	4.9	3.7	1.2	9.5
Hard maple	18.8	13.7	5.1	1.5	.7	.8	12.8
Soft maple	2.7	.5	2.2	.8	.8	--	2.8
Sweetgum	1.9	--	1.9	.8	.7	.1	.2
Tupelo and blackgum	3.0	1.4	1.6	.6	.6	--	.6
Ash	32.8	16.8	16.0	5.3	4.4	.9	15.8
Sycamore	26.8	4.1	22.7	8.3	7.4	.9	2.2
Cottonwood	23.2	3.4	19.8	8.7	8.6	.1	2.2
River birch	1.6	.5	1.1	.5	.5	--	.7
Yellow-poplar	.5	--	.5	.1	.1	--	--
Basswood	.6	--	.6	.2	.2	--	.1
Black walnut	17.6	7.5	10.1	3.4	2.7	.7	8.0
Black cherry	2.1	.4	1.7	.6	.4	.2	1.5
Elm	19.0	11.4	7.6	2.3	2.0	.3	20.4
Other hardwoods	43.8	17.6	26.2	10.5	7.6	2.9	20.4
Noncommercial species	--	--	--	--	--	--	.6
Total hardwoods	969.8	417.1	552.7	207.9	158.7	49.2	316.4
All species	995.1	431.7	563.4	212.1	160.2	51.9	327.9

1/ International 1/4-inch rule.

Table 22.--*Net volume of timber on commercial forest land, by class of timber and softwoods and hardwoods, River-border, Missouri, 1972*

(Million cubic feet)

CLASS OF TIMBER	ALL SPECIES	SOFTWOODS	HARDWOODS
GROWING STOCK TREES:			
SAW LOG TREES:			
SAW LOG PORTION	515.7	14.5	501.2
UPPER STEM PORTION	244.5	4.7	239.8
TOTAL SAWTIMBER	760.2	19.2	741.0
POLETIMBER TREES	573.6	20.5	553.1
TOTAL GROWING STOCK	1,333.8	39.7	1,294.1
CULL TREES:			
ROUGH CULL TREES:			
SAWTIMBER	108.8	2.6	106.2
POLETIMBER	184.9	7.0	177.9
TOTAL ROUGH CULL	293.7	9.6	284.1
SHORT LOG CULL TREES:			
SAWTIMBER	76.2	3.7	72.5
POLETIMBER	.1	--	.1
TOTAL SHORT LOG	76.3	3.7	72.6
ROTTEN CULL TREES:			
SAWTIMBER	46.7	2.4	44.3
POLETIMBER	32.6	.4	32.2
TOTAL ROTTEN CULL	79.3	2.8	76.5
TOTAL CULL	449.3	16.1	433.2
SALVABLE DEAD TREES:			
SAWTIMBER	14.7	.9	13.8
POLETIMBER	5.3	--	5.3
TOTAL SALVABLE DEAD	20.0	.9	19.1
ALL CLASSES	1,803.1	56.7	1,746.4

Table 23.--*Net volume of growing stock, sawtimber, and rough and rotten trees on commercial forest land, by individual species, Riverborder, Missouri, 1972*

Species	Growing stock	Sawtimber	Rough and rotten trees
	Million cubic feet	Million board feet[1]	Million cubic feet
Softwoods:			
Shortleaf pine	1.3	1.6	--
Baldcypress	7.4	34.4	3.1
Eastern redcedar	31.0	58.2	13.0
Total softwoods	39.7	94.2	16.1
Hardwoods:			
Select white oak group			
White oak	423.3	1,261.2	94.4
Bur oak	2.9	6.8	.7
Chinkapin oak	25.8	68.4	18.2
Overcup oak	3.6	9.8	2.0
Swamp chestnut oak	1.9	9.8	.7
Swamp white oak	3.7	6.6	1.9
Other white oak group			
Post oak	139.9	217.6	60.0
Select red oak group			
Cherrybark oak	3.5	15.5	1.1
Northern red oak	86.4	327.1	27.8
Shumard oak	4.6	24.0	.3
Red oak group			
Black oak	142.2	373.0	41.2
Scarlet oak	18.9	57.4	4.2
Southern red oak	2.2	6.1	.7
Other red oak group			
Blackjack oak	3.0	1.5	5.8
Pin oak	5.0	22.7	1.8
Shingle oak	6.8	15.1	8.1
Willow oak	.5	2.0	.5
Hickory A group			
Mockernut hickory	18.6	60.8	5.5
Pecan	2.7	13.9	.7
Shagbark hickory	44.6	100.3	11.7
Shellbark hickory	11.2	17.4	4.0
Hickory B group			
Bitternut hickory	7.7	10.6	2.3
Black hickory	17.2	28.7	3.6
Pignut hickory	25.2	48.3	7.4
Hard maple group			
Black maple	.2	--	--
Sugar maple	22.9	23.8	16.2

(Table 23 continued in next column)

(Table 23 cont.)

Species	Growing stock	Sawtimber	Rough and rotten trees
	Million cubic feet	Million board feet[1]	Million cubic feet
Hardwoods (cont.):			
Soft maple group			
Red maple	1.1	1.4	1.5
Silver maple	10.0	36.6	4.4
American beech	.3	1.3	1.1
Sweetgum	4.5	19.1	1.7
Tupelo and blackgum group			
Blackgum	5.6	14.4	1.7
Black tupelo	2.9	9.0	2.6
Water tupelo	.2	1.0	.2
Ash group			
White ash	24.9	45.3	12.7
Green ash	18.4	39.6	7.3
Blue ash	1.8	3.8	1.6
Sycamore	34.1	134.4	2.6
Eastern cottonwood	33.6	159.7	2.6
River birch	2.5	9.8	1.0
Yellow-poplar	1.6	4.6	.1
American basswood	.7	3.5	.1
Black walnut	21.8	51.7	10.2
Black cherry	2.6	8.8	2.0
Elm group			
American elm	17.5	23.3	21.5
Rock elm	.7	2.6	.6
Slippery elm	7.7	15.5	5.6
Winged elm	.6	.6	.2
Other hardwoods			
Boxelder	5.0	16.1	5.8
Ohio buckeye	.5	--	1.0
Sugarberry	1.9	8.9	1.1
Hackberry	9.5	25.1	3.5
Flowering dogwood	.2	--	.8
Common persimmon	2.1	1.3	.6
Honeylocust	3.7	13.3	6.0
Kentucky coffeetree	1.5	4.8	.2
Butternut	.8	1.6	1.0
Red mulberry	.8	1.6	3.5
Black locust	.4	1.8	.3
Sassafras	.3	--	1.0
Northern catalpa	--	--	.2
Black willow	49.8	158.0	5.2
Noncommercial	--	--	.9
Total hardwoods	1,294.1	3,546.9	433.2
All species	1,333.8	3,641.1	449.3

[1] International 1/4-inch rule.

Table 24.--*Net volume of growing stock and sawtimber on commercial forest land, by ownership class and species group, Riverborder, Missouri, 1972*

GROWING STOCK

OWNERSHIP CLASS	ALL SPECIES	SHORTLEAF PINE	OTHER SOFTWOODS	SOFT HARDWOODS	HARD HARDWOODS
			THOUSAND CORDS		
NATIONAL FOREST	62.1	16.5	--	--	45.6
OTHER FEDERAL	111.9	--	3.0	14.0	94.9
STATE, COUNTY, AND MUNICIPAL	263.4	--	28.3	69.9	165.2
FOREST INDUSTRY	222.3	--	--	208.2	14.1
FARMER AND MISCELLANEOUS PRIVATE	16,224.2	--	455.7	2,143.5	13,625.0
ALL OWNERSHIPS	16,883.9	16.5	487.0	2,435.6	13,944.8

SAWTIMBER

			MILLION BOARD FEET[1/]		
NATIONAL FOREST	10.3	1.6	--	--	8.7
OTHER FEDERAL	28.3	--	1.4	3.2	23.7
STATE, COUNTY, AND MUNICIPAL	63.6	--	9.9	14.4	39.3
FOREST INDUSTRY	57.7	--	--	36.3	21.4
FARMER AND MISCELLANEOUS PRIVATE	3,481.2	--	81.3	595.1	2,804.8
ALL OWNERSHIPS	3,641.1	1.6	92.6	649.0	2,897.9

1/ INTERNATIONAL 1/4-INCH RULE.

Table 25.--Net volume of growing stock on commercial forest land, by species and diameter class, Riverborder, Missouri, 1972
(Thousand cords)

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)											
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS:													
SHORTLEAF PINE	16.5	4.6	5.3	--	5.1	1.5	--	--	--	--	--	--	--
CYPRESS	94.3	--	.9	--	--	6.8	9.3	18.0	11.4	15.2	15.9	13.3	3.5
EASTERN REDCEDAR	392.7	112.1	136.2	89.8	34.8	14.6	5.2	--	--	--	--	--	--
TOTAL SOFTWOODS	503.5	116.7	142.4	89.8	39.9	22.9	14.5	18.0	11.4	15.2	15.9	13.3	3.5
HARDWOODS:													
SELECT WHITE OAKS	5839.5	364.8	777.3	1028.4	1339.9	1003.9	636.1	317.3	169.9	84.6	88.1	29.2	--
OTHER WHITE OAKS	1771.1	357.8	470.9	375.2	234.6	168.9	61.7	49.2	24.7	16.6	11.5	--	--
SELECT RED OAKS	1197.4	36.5	92.1	142.9	135.6	199.5	185.4	165.9	66.7	71.5	97.7	3.6	--
RED OAKS	2067.1	207.4	318.3	409.5	261.2	258.4	187.3	146.8	119.5	54.5	85.7	18.5	--
OTHER RED OAKS	193.1	36.4	45.9	19.4	23.2	12.0	--	33.0	13.4	4.3	2.2	3.3	--
HICKORY A	975.7	166.4	172.6	146.5	159.5	142.5	74.2	57.0	20.5	18.1	6.8	11.6	--
HICKORY B	633.1	101.2	151.6	147.2	97.9	55.7	27.9	17.6	14.5	5.7	13.8	--	--
HARD MAPLE	290.6	57.4	71.2	78.6	53.5	20.1	5.3	4.5	--	--	--	--	--
SOFT MAPLE	141.1	6.1	15.2	17.1	30.8	15.0	21.9	11.0	6.0	6.0	12.0	--	--
BEECH	3.7	--	--	--	--	--	3.7	--	--	--	--	--	--
SWEETGUM	57.4	2.9	2.2	8.2	10.9	2.4	19.3	8.8	--	--	2.7	--	--
TUPELO+BLACKGUM	112.4	10.0	13.5	30.9	15.6	11.1	23.1	7.0	--	--	1.2	--	--
ASH	571.1	79.5	108.0	116.6	105.4	54.4	30.9	19.7	5.6	10.7	26.0	14.3	--
SYCAMORE	430.4	14.8	20.1	33.9	39.3	57.7	36.8	53.4	34.0	49.6	70.8	20.0	--
COTTONWOOD	426.3	6.9	22.0	21.6	29.3	50.1	32.7	55.7	34.3	21.1	64.2	69.8	18.6
RIVER BIRCH	31.9	8.2	1.4	--	4.6	--	5.5	5.9	--	--	--	6.3	--
YELLOW-POPLAR	20.1	.7	1.4	1.8	5.4	1.2	--	--	1.6	--	--	8.0	--
BASSWOOD	8.5	--	--	--	3.5	--	5.0	--	--	--	--	--	--
BLACK WALNUT	275.7	18.2	63.7	37.7	48.0	55.3	34.9	7.4	10.5	--	--	--	--
BLACK CHERRY	32.2	6.8	--	--	7.8	12.7	4.9	--	--	--	--	--	--
ELM	334.1	70.1	63.7	68.2	57.9	13.2	16.0	19.8	5.0	--	5.5	6.8	7.9
OTHER HARDWOODS	967.9	76.0	97.6	180.2	197.1	189.4	109.7	69.6	25.7	11.7	10.9	--	--
TOTAL HARDWOODS	16380.4	1628.1	2508.7	2863.9	2861.0	2323.5	1522.3	1049.6	551.9	354.4	499.1	191.4	26.5
ALL SPECIES	16883.9	1744.8	2651.1	2953.7	2900.9	2346.4	1536.8	1067.6	563.3	369.6	515.0	204.7	30.0

Table 26.--*Net volume of sawtimber on commercial forest land, by species and diameter class, Riverborder, Missouri, 1972*
(Million board feet)[1/]

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS:											
SHORTLEAF PINE	1.6	--	1.1	.5	--	--	--	--	--	--	--
CYPRESS	34.4	--	--	2.3	3.5	7.0	4.6	5.7	5.8	4.5	1.0
EASTERN REDCEDAR	58.2	35.9	14.3	5.9	2.1	--	--	--	--	--	--
TOTAL SOFTWOODS	94.2	35.9	15.4	8.7	5.6	7.0	4.6	5.7	5.8	4.5	1.0
HARDWOODS:											
SELECT WHITE OAKS	1362.6	--	503.0	373.9	239.5	109.4	64.4	31.4	33.7	7.3	--
OTHER WHITE OAKS	217.6	--	90.5	67.6	24.8	19.1	7.4	5.0	3.2	--	--
SELECT RED OAKS	366.6	--	49.9	83.7	70.6	71.6	29.6	27.4	32.7	1.1	--
RED OAKS	436.5	--	103.6	100.8	71.2	59.5	41.6	23.6	30.5	5.7	--
OTHER RED OAKS	41.3	--	11.5	4.9	--	15.6	5.2	1.9	.9	1.3	--
HICKORY A	192.4	--	63.6	52.6	30.9	22.5	9.8	7.1	2.1	3.8	--
HICKORY B	87.6	--	36.6	20.0	11.2	5.8	5.4	2.7	5.9	--	--
HARD MAPLE	23.8	--	15.5	5.4	1.7	1.2	--	--	--	--	--
SOFT MAPLE	38.0	--	11.3	5.7	8.3	3.9	2.5	2.4	3.9	--	--
BEECH	1.3	--	--	--	1.3	--	--	--	--	--	--
SWEETGUM	19.1	--	4.4	1.2	7.3	5.0	--	--	1.2	--	--
TUPELO+BLACKGUM	24.4	--	5.8	4.7	10.2	2.7	--	--	1.0	--	--
ASH	88.7	--	30.5	17.5	11.0	6.9	1.1	2.4	13.0	6.3	--
SYCAMORE	134.4	--	12.8	19.6	13.4	20.1	11.5	21.3	28.6	7.1	--
COTTONWOOD	159.7	--	14.6	22.9	14.9	24.5	13.9	9.4	26.4	26.5	6.6
RIVER BIRCH	9.8	--	1.9	--	1.9	3.5	--	--	--	2.5	--
YELLOW-POPLAR	4.6	--	2.0	.5	--	--	.7	--	--	1.4	--
BASSWOOD	3.5	--	2.0	--	1.5	--	--	--	--	--	--
BLACK WALNUT	51.7	--	14.5	18.9	12.4	3.2	2.7	--	--	--	--
BLACK CHERRY	8.8	--	2.7	4.4	1.7	--	--	--	--	--	--
ELM	42.0	--	21.0	4.5	5.7	5.6	1.4	--	1.3	1.9	.6
OTHER HARDWOODS	232.5	--	70.0	70.3	45.8	25.1	11.3	5.2	4.8	--	--
TOTAL HARDWOODS	3546.9	--	1067.7	879.1	585.3	405.2	208.5	139.8	189.2	64.9	7.2
ALL SPECIES	3641.1	35.9	1083.1	887.8	590.9	412.2	213.1	145.5	195.0	69.4	8.2

1/ INTERNATIONAL 1/4-INCH RULE.

Table 27.--*Net volume of growing stock on commercial forest land, by species and forest type, Riverborder, Missouri, 1972*
(Million cubic feet)

SPECIES	ALL FOREST TYPES	SHORTLEAF PINE	EASTERN REDCEDAR	EASTERN HARDWOOD	SHORTLEAF PINE-OAK	POST-BLACKJACK OAK	BLACK-SCARLET OAK	WHITE OAK	OAK-GUM-CYPRESS	ELM-ASH-COTTON-WOOD	COTTON-WOOD	MAPLE-BEECH	NON-STOCKED
SOFTWOODS:													
SHORTLEAF PINE	1.3	--	--	--	1.0	--	--	--	--	--	--	.3	--
CYPRESS	7.4	--	--	--	--	--	--	--	5.3	2.1	--	--	--
EASTERN REDCEDAR	31.0	--	11.7	7.5	--	1.8	2.1	4.9	--	.9	--	1.0	1.1
TOTAL SOFTWOODS	39.7	--	11.7	7.5	1.0	1.8	2.1	4.9	5.3	3.0	--	1.3	1.1
HARDWOODS:													
SELECT WHITE OAKS	461.2	--	1.8	5.9	.5	9.2	54.6	368.2	4.5	8.3	--	8.0	.2
OTHER WHITE OAKS	139.9	--	.5	3.1	--	86.3	15.2	30.1	1.1	1.0	--	1.5	1.1
SELECT RED OAKS	94.5	--	.3	2.1	--	5.6	29.7	44.7	6.0	.8	--	5.3	--
RED OAKS	163.3	--	1.4	2.4	.4	15.4	92.7	39.3	4.7	3.5	--	3.5	--
OTHER RED OAKS	15.3	--	--	--	--	2.5	6.3	2.3	2.6	1.6	--	--	--
HICKORY A	77.1	--	.3	1.4	.2	3.3	25.4	31.5	3.4	6.2	--	5.1	.3
HICKORY B	50.1	--	--	.5	.3	6.4	14.8	19.0	2.6	1.6	--	4.7	.2
HARD MAPLE	23.1	--	--	--	--	--	2.5	12.3	--	--	--	8.3	--
SOFT MAPLE	11.1	--	--	--	--	--	--	.2	.6	9.5	--	.8	--
BEECH	.3	--	--	--	--	--	.1	--	--	--	--	.2	--
SWEETGUM	4.5	--	--	--	--	--	1.6	--	.6	2.0	--	.3	--
TUPELO+BLACKGUM	8.7	--	--	--	.4	--	1.9	1.5	4.2	.4	--	.3	--
ASH	45.1	--	--	1.3	--	1.5	6.3	12.2	2.4	20.5	.1	.8	--
SYCAMORE	34.1	--	.2	.7	--	--	4.8	1.3	1.0	19.8	--	6.3	--
COTTONWOOD	33.6	--	--	--	--	--	--	--	--	23.7	9.0	--	.9
RIVER BIRCH	2.5	--	--	--	--	--	--	--	.9	1.6	--	--	--
YELLOW-POPLAR	1.6	--	--	--	--	--	.6	.5	--	--	--	.5	--
BASSWOOD	.7	--	--	--	--	--	--	--	--	--	--	.7	--
BLACK WALNUT	21.8	--	.1	--	--	2.0	4.4	5.8	.5	5.5	--	3.5	--
BLACK CHERRY	2.6	--	--	--	--	.5	.7	.6	--	.8	--	--	--
ELM	26.5	--	--	1.2	--	1.2	3.2	5.7	.6	7.4	--	7.2	--
OTHER HARDWOODS	76.5	--	.2	.5	--	1.1	1.0	2.9	2.6	65.0	.2	3.0	--
TOTAL HARDWOODS	1294.1	--	4.8	19.1	1.8	135.0	265.8	578.1	38.3	179.2	9.3	60.0	2.7
ALL SPECIES	1333.8	--	16.5	26.6	2.8	136.8	267.9	583.0	43.6	182.2	9.3	61.3	3.8

Table 28.--*Net volume of sawtimber on commercial forest land, by species and forest type, Riverborder, Missouri, 1972*
(Million board feet)[1/]

SPECIES	ALL FOREST TYPES	SHORTLEAF PINE	EASTERN REDCEDAR	EASTERN REDCEDAR-HARDWOOD	SHORTLEAF PINE-OAK	POST-BLACKJACK OAK	BLACK-SCARLET OAK	WHITE OAK	OAK-GUM-CYPRESS	ELM-ASH-COTTON-WOOD	COTTON-WOOD	MAPLE-BEECH	NON-STOCKED
SOFTWOODS:													
SHORTLEAF PINE	1.6	--	--	--	.6	--	--	--	--	--	--	1.0	--
CYPRESS	34.4	--	--	--	--	--	--	--	24.7	9.7	--	--	--
EASTERN REDCEDAR	58.2	--	21.2	13.4	--	4.0	4.4	9.6	--	3.0	--	--	2.6
TOTAL SOFTWOODS	94.2	--	21.2	13.4	.6	4.0	4.4	9.6	24.7	12.7	--	1.0	2.6
HARDWOODS:													
SELECT WHITE OAKS	1362.6	--	4.3	17.0	2.3	26.4	176.8	1061.5	15.2	30.8	--	26.3	2.0
OTHER WHITE OAKS	217.6	--	.7	7.6	--	105.0	46.0	55.4	1.7	--	--	--	1.2
SELECT RED OAKS	366.6	--	.9	7.1	--	23.5	113.1	159.9	29.7	6.3	--	26.1	--
RED OAKS	436.5	--	2.4	8.6	1.6	32.5	242.6	105.6	24.3	8.1	--	10.8	--
OTHER RED OAKS	41.3	--	--	--	--	1.6	16.7	7.2	10.0	5.8	--	--	--
HICKORY A	192.4	--	--	1.1	--	.9	65.4	77.9	13.6	15.8	--	15.1	2.6
HICKORY B	87.6	--	--	.7	--	7.9	22.9	35.1	5.4	.8	--	14.8	--
HARD MAPLE	23.8	--	--	--	--	--	2.7	10.5	--	--	--	10.6	--
SOFT MAPLE	38.0	--	--	--	--	--	--	--	2.8	31.0	--	4.2	--
BEECH	1.3	--	--	--	--	--	.6	--	--	--	--	.7	--
SWEETGUM	19.1	--	--	--	--	--	5.2	--	2.9	10.3	--	.7	--
TUPELO+BLACKGUM	24.4	--	--	--	.4	--	7.5	1.3	14.4	.8	--	--	--
ASH	88.7	--	--	.5	--	2.0	14.4	26.5	1.8	42.5	--	1.0	--
SYCAMORE	134.4	--	--	2.1	--	--	14.9	4.1	6.2	80.6	--	26.5	--
COTTONWOOD	159.7	--	--	--	--	--	--	--	--	118.2	38.4	--	3.1
RIVER BIRCH	9.8	--	--	--	--	--	--	--	4.4	5.4	--	--	--
YELLOW-POPLAR	4.6	--	--	--	--	--	1.4	1.8	--	--	--	1.4	--
BASSWOOD	3.5	--	--	--	--	--	--	--	--	--	--	3.5	--
BLACK WALNUT	51.7	--	.7	--	--	2.0	9.8	11.5	1.3	18.8	--	7.6	--
BLACK CHERRY	8.8	--	--	--	--	2.6	1.8	1.3	--	3.1	--	--	--
ELM	42.0	--	--	--	--	.7	5.2	4.2	1.6	11.2	--	19.1	--
OTHER HARDWOODS	232.5	--	.8	.8	--	1.0	--	5.1	5.0	212.5	--	7.3	--
TOTAL HARDWOODS	3546.9	--	9.8	45.5	4.3	206.1	747.0	1568.9	140.3	602.0	38.4	175.7	8.9
ALL SPECIES	3641.1	--	31.0	58.9	4.9	210.1	751.4	1578.5	165.0	614.7	38.4	176.7	11.5

1/ INTERNATIONAL 1/4-INCH RULE.

Table 29.--*Net volume of timber in cull trees on commercial forest land, by species and cull tree class, Riverborder, Missouri, 1972*
(Million cubic feet)

SPECIES	ALL CULL TREES	SHORT-LOG TREES 1/	ROUGH TREES	ROTTEN TREES
SOFTWOODS:				
CYPRESS	3.1	.6	.3	2.2
EASTERN REDCEDAR	13.0	3.1	9.3	.6
TOTAL SOFTWOODS	16.1	3.7	9.6	2.8
HARDWOODS:				
SELECT WHITE OAKS	117.9	25.2	76.9	15.8
OTHER WHITE OAKS	60.0	7.3	43.5	9.2
SELECT RED OAKS	29.2	6.1	13.7	9.4
RED OAKS	46.1	8.7	27.1	10.3
OTHER RED OAKS	16.2	2.5	12.1	1.6
HICKORY A	21.9	3.8	15.7	2.4
HICKORY B	13.3	2.1	9.6	1.6
HARD MAPLE	16.2	.7	12.1	3.4
SOFT MAPLE	5.9	1.4	2.6	1.9
BEECH	1.1	--	.8	.3
SWEETGUM	1.7	--	1.2	.5
TUPELO+BLACKGUM	4.5	1.5	1.8	1.2
ASH	21.6	2.9	15.1	3.6
SYCAMORE	2.6	.6	1.6	.4
COTTONWOOD	2.6	.5	1.9	.2
RIVER BIRCH	1.0	--	.5	.5
YELLOW-POPLAR	.1	--	.1	--
BASSWOOD	.1	--	--	.1
BLACK WALNUT	10.2	2.6	6.3	1.3
BLACK CHERRY	2.0	.4	1.2	.4
ELM	27.9	3.5	19.6	4.8
OTHER HARDWOODS	30.2	2.8	19.8	7.6
NONCOMMERCIAL SPP.	.9	--	.9	--
TOTAL HARDWOODS	433.2	72.6	284.1	76.5
ALL SPECIES	449.3	76.3	293.7	79.3

1/ VOLUMES ARE FOR TREES 9.0 INCHES D.B.H AND LARGER FOR SOFTWOODS AND 11.0 INCHES D.B.H. AND LARGER FOR HARDWOODS.
VOLUMES FOR ROUGH AND ROTTEN TREES ARE FOR TREES 5.0 INCHES D.B.H. AND LARGER

Table 30.--*Net volume of short-log trees on commercial forest land, by species and diameter class, Riverborder, Missouri, 1972*
(Million board feet)[1/]

SPECIES	ALL CLASSES	DIAMETER CLASS (INCHES AT BREAST HEIGHT)									
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS:											
CYPRESS	2.6	1.4	--	--	--	--	--	.4	.8	--	--
EASTERN REDCEDAR	16.1	10.4	5.4	--	.3	--	--	--	--	--	--
TOTAL SOFTWOODS	18.7	11.8	5.4	--	.3	--	--	.4	.8	--	--
HARDWOODS:											
SELECT WHITE OAKS	76.6	--	17.2	23.0	15.9	5.5	4.9	4.8	4.0	1.3	--
OTHER WHITE OAKS	26.3	--	12.5	7.0	2.5	4.3	--	--	--	--	--
SELECT RED OAKS	18.1	--	1.4	3.4	1.5	--	2.7	2.5	4.1	2.5	--
RED OAKS	30.4	--	7.6	7.8	5.1	2.6	1.9	1.7	1.4	2.1	.2
OTHER RED OAKS	8.7	--	3.3	3.5	--	.9	--	--	1.0	--	--
HICKORY A	13.1	--	5.4	2.2	5.3	.2	--	--	--	--	--
HICKORY B	6.0	--	4.4	1.3	--	--	--	--	--	.3	--
HARD MAPLE	.5	--	--	--	.2	--	.3	--	--	--	--
SOFT MAPLE	2.0	--	.3	.3	--	.4	.4	--	.6	--	--
TUPELO+BLACKGUM	1.4	--	1.4	--	--	--	--	--	--	--	--
ASH	2.4	--	1.1	.6	--	.2	.2	.3	--	--	--
SYCAMORE	.6	--	--	--	.2	--	.4	--	--	--	--
COTTONWOOD	.8	--	--	--	--	--	.3	--	--	.5	--
BLACK WALNUT	2.6	--	.2	.9	1.5	--	--	--	--	--	--
BLACK CHERRY	.3	--	--	.3	--	--	--	--	--	--	--
ELM	6.2	--	.6	.4	.5	.7	.4	.5	1.0	1.2	.9
OTHER HARDWOODS	3.8	--	1.1	.7	.1	.6	.4	.3	.3	.3	--
TOTAL HARDWOODS	199.8	--	56.5	51.4	32.8	15.4	11.9	10.1	12.4	8.2	1.1
ALL SPECIES	218.5	11.8	61.9	51.4	33.1	15.4	11.9	10.5	13.2	8.2	1.1

1/ INTERNATIONAL 1/4-INCH RULE.

Table 31.--*Net volume of sawtimber on commercial forest land, by species and log grade class, Riverborder, Missouri, 1972*

(Million board feet)[1/]

SPECIES	ALL GRADES	LOG GRADE 1	LOG GRADE 2	LOG GRADE 3	TIE AND TIMBER
SOFTWOODS:					
SHORTLEAF PINE	1.6	.1	.3	1.2	--
CYPRESS	34.4	5.0	6.7	22.7	--
EASTERN REDCEDAR	58.2	.1	.9	56.5	.7
TOTAL SOFTWOODS	94.2	5.2	7.9	80.4	.7
HARDWOODS:					
SELECT WHITE OAKS	1,362.6	138.4	318.2	645.3	260.7
OTHER WHITE OAKS	217.6	7.8	24.9	127.0	57.9
SELECT RED OAKS	366.6	82.9	103.9	154.7	25.1
RED OAKS	436.5	34.3	120.1	189.4	92.7
OTHER RED OAKS	41.3	1.8	3.4	8.8	27.3
HICKORY A	192.4	23.7	35.0	71.9	61.8
HICKORY B	87.6	2.4	14.1	37.4	33.7
HARD MAPLE	23.8	--	1.8	11.5	10.5
SOFT MAPLE	38.0	1.3	20.4	7.5	8.8
BEECH	1.3	--	--	--	1.3
SWEETGUM	19.1	3.7	3.7	4.5	7.2
TUPELO AND BLACKGUM	24.4	4.9	5.7	7.3	6.5
ASH	88.7	3.8	39.3	44.5	1.1
SYCAMORE	134.4	46.8	34.3	46.5	6.8
COTTONWOOD	159.7	28.0	26.9	88.2	16.6
RIVER BIRCH	9.8	3.4	2.4	1.8	2.2
YELLOW-POPLAR	4.6	.6	1.6	1.7	.7
BASSWOOD	3.5	--	1.0	2.3	.2
BLACK WALNUT	51.7	5.8	16.3	28.4	1.2
BLACK CHERRY	8.8	--	--	7.2	1.6
ELM	42.0	3.3	9.4	21.7	7.6
OTHER HARDWOODS	232.5	26.9	35.6	67.8	102.2
TOTAL HARDWOODS	3,546.9	419.8	818.0	1,575.4	733.7
ALL SPECIES*	3,641.1	425.0	825.9	1,655.8	734.4

1/ INTERNATIONAL 1/4-INCH RULE.

Table 32.--*Walnut volume on nonforest land, by diameter class and class of timber, Riverborder, Missouri, 1972*

DIAMETER CLASS (INCHES AT BREAST HEIGHT)	GROWING STOCK TREES	SAWTIMBER TREES	ROUGH TREES	SHORT-LOG TREES	ROTTEN TREES
	THOUSAND CUBIC FEET	THOUSAND BOARD FEET[1/]	THOUSAND CUBIC FEET	THOUSAND BOARD FEET[1/]	THOUSAND CUBIC FEET
5.0-6.9	--	--	288.9	--	--
7.0-8.9	721.1	--	658.4	--	--
9.0-10.9	755.2	--	--	--	--
11.0-12.9	271.0	2,018.8	198.3	--	161.1
13.0-14.9	728.1	3.849.9	375.7	--	--
15.0-16.9	1,065.2	6,050.6	112.9	416.8	47.3
17.0-18.9	--	--	--	--	319.2
19.0-20.9	314.8	1,639.7	--	--	--
21.0-22.9	--	--	--	--	47.0
23.0-28.9	--	--	--	--	111.9
29.0-38.9	--	--	--	900.1	--
ALL DIAMETERS	3,855.4	13,559.0	1,634.2	1,316.9	686.5

1/ INTERNATIONAL 1/4-INCH RULE.

Table 33.--*Net annual growth of growing stock and sawtimber on commercial forest land, by species and county, Riverborder, Missouri, 1971*

SPECIES	ALL COUNTIES		BOONE		CALLAWAY		CAPE GIRARDEAU		COLE	
	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER
	CORDS	THOUSAND BD. FT.[1]/	CORDS	THOUSAND BD. FT.[1]/	CORDS	THOUSAND BD. FT.[1]/	CORDS	THOUSAND BD. FT.[1]/	CORDS	THOUSAND BD. FT.[1]/
SOFTWOODS:										
SHORTLEAF PINE	1,004	142	17	6	23	7	17	5	9	3
CYPRESS	2,598	996	--	--	--	--	--	--	--	--
EASTERN REDCEDAR	15,079	2,269	842	124	1,152	165	531	80	739	123
TOTAL SOFTWOODS	18,681	3,407	859	130	1,175	172	548	85	748	126
HARDWOODS:										
SELECT WHITE OAKS	111,832	21,846	5,306	1,025	8,999	1,720	5,326	1,063	3,595	686
OTHER WHITE OAKS	23,718	2,437	1,269	124	2,197	211	966	101	938	92
SELECT RED OAKS	35,847	8,690	1,693	405	2,888	687	1,455	341	1,167	275
RED OAKS	55,040	10,856	2,532	466	4,286	788	2,081	409	1,760	321
OTHER RED OAKS	6,153	752	313	34	543	64	245	29	213	23
HICKORY A	27,458	4,431	1,244	177	2,109	297	1,100	170	844	117
HICKORY B	13,090	1,529	578	59	981	97	487	55	397	39
HARD MAPLE	4,936	411	248	21	409	34	244	19	158	13
SOFT MAPLE	6,267	1,496	56	17	85	25	46	14	29	9
BEECH	117	42	--	--	--	--	--	--	--	--
SWEETGUM	3,159	650	38	24	36	22	34	22	14	8
TUPELO AND BLACKGUM	3,184	515	70	12	112	21	50	8	47	7
ASH	19,857	2,203	956	99	1,623	156	785	100	604	54
SYCAMORE	24,043	7,257	1,248	374	1,803	545	1,046	314	672	196
COTTONWOOD	20,143	6,575	894	279	1,144	348	798	248	412	126
RIVER BIRCH	1,450	471	39	15	50	15	35	13	17	5
YELLOW-POPLAR	815	198	2	1	4	1	2	1	1	1
BASSWOOD	269	127	15	7	23	11	12	6	9	4
BLACK WALNUT	6,131	479	333	26	541	41	269	22	217	14
BLACK CHERRY	158	152	9	8	21	12	5	8	11	5
ELM	6,168	544	290	28	466	39	219	14	179	17
OTHER HARDWOODS	44,099	10,108	1,612	379	1,818	432	1,070	267	1,198	248
TOTAL HARDWOODS	413,934	81,769	18,745	3,580	30,138	5,566	16,275	3,224	12,482	2,260
ALL SPECIES	432,615	85,176	19,604	3,710	31,313	5,738	16,823	3,309	13,230	2,386

(Table 33 cont. on next page)

(Table 33 cont.)

SPECIES	DUNKLIN		FRANKLIN		GASCONADE		HOWARD		JEFFERSON	
	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER
	CORDS	THOUSAND BD. FT.[1]/	CORDS	THOUSAND BD. FT.[1]/	CORDS	THOUSAND BD. FT.[1]/	CORDS	THOUSAND BD. FT.[1]/	CORDS	THOUSAND BD. FT.[1]/
SOFTWOODS:										
SHORTLEAF PINE	--	--	231	42	17	5	12	4	23	7
CYPRESS	642	244	--	--	--	--	--	--	--	--
EASTERN REDCEDAR	--	--	1,798	270	1,093	158	555	82	1,835	275
TOTAL SOFTWOODS	642	244	2,029	312	1,110	163	567	86	1,858	282
HARDWOODS:										
SELECT WHITE OAKS	408	74	14,330	2,817	9,008	1,727	2,865	561	12,699	2,480
OTHER WHITE OAKS	34	7	2,651	287	2,117	205	634	65	2,575	268
SELECT RED OAKS	422	117	4,170	993	2,725	640	938	228	3,849	925
RED OAKS	829	205	5,953	1,191	3,957	742	1,396	263	5,450	1,065
OTHER RED OAKS	74	19	656	70	465	52	164	17	599	62
HICKORY A	431	120	2,990	461	1,959	286	674	97	2,682	401
HICKORY B	149	25	1,353	159	924	95	307	33	1,233	140
HARD MAPLE	4	1	639	51	386	30	138	12	549	44
SOFT MAPLE	1,011	224	96	29	51	15	31	10	69	21
BEECH	3	1	--	--	--	--	--	--	--	--
SWEETGUM	273	57	54	34	36	23	17	11	34	21
TUPELO AND BLACKGUM	285	57	169	33	99	19	39	6	142	28
ASH	415	70	2,112	230	1,399	134	521	51	1,831	177
SYCAMORE	801	271	2,199	660	1,204	356	709	211	1,586	469
COTTONWOOD	1,083	399	1,326	404	646	200	453	140	669	201
RIVER BIRCH	177	52	82	28	45	16	19	7	55	18
YELLOW-POPLAR	39	11	5	2	4	1	1	--	5	2
BASSWOOD	--	--	30	14	15	7	10	5	26	12
BLACK WALNUT	30	8	676	51	438	31	185	12	587	34
BLACK CHERRY	--	--	10	20	16	12	7	5	20	16
ELM	189	6	559	37	356	23	165	17	481	32
OTHER HARDWOODS	3,770	873	2,519	541	1,512	316	952	214	1,548	301
TOTAL HARDWOODS	10,427	2,597	42,579	8,112	27,362	4,930	10,225	1,965	36,689	6,717
ALL SPECIES	11,069	2,841	44,608	8,424	28,472	5,093	10,792	2,051	38,547	6,999

(Table 33 cont. on next page)

(Table 33 cont.)

SPECIES	MISSISSIPPI		MONITEAU		MONTGOMERY		NEW MADRID		OSAGE	
	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER
	CORDS	THOUSAND BD. FT.[1/]	CORDS	THOUSAND BD. FT.[1/]	CORDS	THOUSAND BD. FT.[1/]	CORDS	THOUSAND BD. FT.[1/]	CORDS	THOUSAND BD. FT.[1/]
SOFTWOODS:										
SHORTLEAF PINE	--	--	9	3	14	5	--	--	14	5
CYPRESS	321	125	--	--	--	--	345	133	--	--
EASTERN RECEDAR	--	--	550	78	699	125	--	--	1,490	215
TOTAL SOFTWOODS	321	125	559	81	713	130	345	133	1,504	220
HARDWOODS:										
SELECT WHITE OAKS	206	32	2,414	460	4,817	926	252	40	8,295	1,601
OTHER WHITE OAKS	16	2	692	64	1,256	123	16	3	2,108	206
SELECT RED OAKS	93	11	902	226	1,585	375	121	18	2,828	697
RED OAKS	214	44	1,339	243	2,388	438	250	48	4,101	759
OTHER RED OAKS	45	10	170	18	319	40	67	20	488	52
HICKORY A	156	57	611	79	1,197	167	200	66	1,953	273
HICKORY B	32	10	296	27	537	53	36	10	924	94
HARD MAPLE	--	--	110	10	229	20	--	--	365	31
SOFT MAPLE	971	231	20	6	67	20	1,013	228	72	22
BEECH	--	--	--	--	--	--	--	--	--	--
SWEETGUM	88	20	1	1	49	32	114	28	43	27
TUPELO AND BLACKGUM	183	28	40	8	62	11	148	26	122	23
ASH	365	67	478	34	987	108	379	70	1,485	133
SYCAMORE	451	125	437	128	1,460	444	631	178	1,564	470
COTTONWOOD	1,430	508	169	48	1,226	384	1,420	513	984	306
RIVER BIRCH	112	34	10	2	43	17	165	47	48	17
YELLOW-POPLAR	--	--	1	--	2	1	--	--	3	1
BASSWOOD	--	--	6	3	17	8	--	--	23	11
BLACK WALNUT	43	9	170	10	351	30	35	7	498	33
BLACK CHERRY	--	--	11	4	5	7	--	--	15	11
ELM	169	-3	144	12	314	33	228	2	429	42
OTHER HARDWOODS	3,651	830	524	101	1,502	393	3,870	887	1,822	409
TOTAL HARDWOODS	8,225	2,015	8,545	1,484	18,413	3,630	8,945	2,191	28,170	5,218
ALL SPECIES	8,546	2,140	9,104	1,565	19,126	3,760	9,290	2,324	29,674	5,438

(Table 33 cont. on next page)

(Table 33 cont.)

SPECIES	PEMISCOT		PERRY		ST. CHARLES		ST. LOUIS		STE. GENEVIEVE	
	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER
	CORDS	THOUSAND BD. FT.[1]/	CORDS	THOUSAND BD. FT.[1]/	CORDS	THOUSAND BD. FT.[1]/	CORDS	THOUSAND BD. FT.[1]/	CORDS	THOUSAND BD. FT.[1]/
SOFTWOODS:										
SHORTLEAF PINE	--	--	76	5	17	5	17	5	494	30
CYPRESS	325	124	--	--	--	--	--	--	--	--
EASTERN REDCEDAR	--	--	663	100	528	85	632	86	1,011	141
TOTAL SOFTWOODS	325	124	739	105	545	90	649	91	1,505	171
HARDWOODS:										
SELECT WHITE OAKS	273	32	6,124	1,202	5,070	1,022	3,266	657	8,294	1,605
OTHER WHITE OAKS	7	1	1,189	126	800	90	613	68	1,952	189
SELECT RED OAKS	166	22	1,807	432	1,414	334	1,013	250	2,689	654
RED OAKS	238	51	2,603	513	1,970	387	1,484	292	3,891	749
OTHER RED OAKS	40	9	289	30	248	33	186	22	447	48
HICKORY A	198	64	1,301	197	1,100	172	763	115	1,880	257
HICKORY B	71	8	605	67	471	58	341	40	961	87
HARD MAPLE	--	--	274	22	261	22	170	15	356	29
SOFT MAPLE	814	186	41	12	91	28	48	14	44	14
BEECH	--	--	--	--	--	--	--	--	--	--
SWEETGUM	104	25	30	19	91	60	33	21	13	7
TUPELO AND BLACKGUM	172	31	75	12	55	7	42	7	164	27
ASH	309	56	935	100	926	147	626	79	1,329	108
SYCAMORE	509	147	989	294	2,074	637	1,048	321	951	280
COTTONWOOD	1,221	435	679	210	2,049	651	860	268	291	84
RIVER BIRCH	95	30	36	14	73	32	36	13	27	7
YELLOW-POPLAR	117	34	2	1	1	1	1	--	3	1
BASSWOOD	--	--	13	6	22	10	12	6	17	8
BLACK WALNUT	35	7	305	22	351	37	231	22	415	22
BLACK CHERRY	--	--	6	9	-5	9	-1	6	18	10
ELM	195	5	235	18	307	39	211	21	347	24
OTHER HARDWOODS	2,850	676	1,378	292	2,836	738	1,089	283	1,014	180
TOTAL HARDWOODS	7,414	1,819	18,916	3,598	20,205	4,514	12,072	2,520	25,103	4,390
ALL SPECIES	7,739	1,943	19,655	3,703	20,750	4,604	12,721	2,611	26,608	4,561

(Table 33 cont. on next page)

(Table 33 cont.)

SPECIES	SCOTT		STODDARD		WARREN	
	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER	GROWING STOCK	SAW-TIMBER
	CORDS	THOUSAND BD. FT.1/	CORDS	THOUSAND BD. FT.1/	CORDS	THOUSAND BD. FT.1/
SOFTWOODS:						
SHORTLEAF PINE	--	--	--	--	14	5
CYPRESS	168	64	797	306	--	--
EASTERN REDCEDAR	--	--	--	--	961	162
TOTAL SOFTWOODS	168	64	797	306	975	167
HARDWOODS:						
SELECT WHITE OAKS	1,064	255	2,117	477	7,104	1,384
OTHER WHITE OAKS	74	18	176	41	1,438	146
SELECT RED OAKS	551	167	1,238	390	2,133	503
RED OAKS	1,632	415	3,699	891	2,987	576
OTHER RED OAKS	53	13	173	45	356	42
HICKORY A	851	210	1,689	422	1,526	226
HICKORY B	611	101	1,101	195	695	77
HARD MAPLE	27	4	46	7	323	26
SOFT MAPLE	340	76	1,207	275	65	20
BEECH	44	16	70	25	--	--
SWEETGUM	680	39	1,327	117	50	32
TUPELO AND BLACKGUM	306	30	724	100	78	14
ASH	149	22	497	77	1,146	131
SYCAMORE	259	76	948	321	1,454	440
COTTONWOOD	331	119	1,066	391	992	313
RIVER BIRCH	35	9	200	60	51	20
YELLOW-POPLAR	271	62	348	76	3	1
BASSWOOD	--	--	--	--	19	9
BLACK WALNUT	12	3	33	9	376	29
BLACK CHERRY	--	--	--	--	10	10
ELM	107	40	249	70	329	28
OTHER HARDWOODS	1,151	274	4,367	1,000	2,046	474
TOTAL HARDWOODS	8,548	1,949	21,275	4,989	23,181	4,501
ALL SPECIES	8,716	2,013	22,072	5,295	24,156	4,668

1/ INTERNATIONAL 1/4-INCH RULE.

Table 34.--*Timber removals from growing stock and sawtimber on commercial forest land, by item and species group, Riverborder, Missouri, 1971*[1/]

ITEM	GROWING STOCK					SAWTIMBER				
	ALL SPECIES	SHORTLEAF PINE	OTHER SOFTWOODS	SOFT HARDWOODS	HARD HARDWOODS	ALL SPECIES	SHORTLEAF PINE	OTHER SOFTWOODS	SOFT HARDWOODS	HARD HARDWOODS
	CORDS					THOUSAND BOARD FEET[2/]				
ROUNDWOOD PRODUCTS:										
SAW LOGS	91,171	962	963	60,611	28,635	42,504	439	382	30,700	10,983
COOPERAGE LOGS	41,051	--	--	316	40,735	19,491	--	--	126	19,365
VENEER LOGS	3,278	--	--	1,772	1,506	1,182	--	--	619	563
PULPWOOD	3,291	--	--	2,354	937	1,158	--	--	820	338
POSTS	975	51	76	266	582	218	3	5	67	143
CHARCOAL WOOD	6,266	--	--	25	6,241	732	--	--	2	730
FUELWOOD	18,417	--	203	1,924	16,290	3,438	--	37	339	3,062
MINE TIMBERS	418	--	--	--	418	37	--	--	--	37
HANDLE BOLTS	1,126	--	--	--	1,126	435	--	--	6	429
MISCELLANEOUS[3/]	811	--	--	13	798	349	--	--	5	344
ALL PRODUCTS	166,804	1,013	1,242	67,281	97,268	69,544	442	424	32,684	35,994
LOGGING RESIDUES	29,911	101	25	8,417	21,368	4,159	12	4	1,266	2,877
OTHER REMOVAL	253,367	--	8,456	65,764	179,147	41,689	--	1,784	11,746	28,159
TOTAL REMOVALS	450,082	1,114	9,723	141,462	297,783	115,392	454	2,212	45,696	67,030

1/ See glossary for timber removals from growing stock (page 5).
2/ International 1/4-inch rule.
3/ Includes shaving wood, heading bolts, etc.

Table 35.--*Timber removals from growing stock and sawtimber on commercial forest land, by species and county, Riverborder, Missouri, 1971*[1/]

SPECIES	ALL COUNTIES		BOONE		CALLAWAY		CAPE GIRARDEAU		COLE	
	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER
	CORDS	THOUSAND BD. FT.[2/]	CORDS	THOUSAND BD. FT.[2/]	CORDS	THOUSAND BD. FT.[2/]	CORDS	THOUSAND BD. FT.[2/]	CORDS	THOUSAND BD. FT.[2/]
SOFTWOODS:										
SHORTLEAF PINE	1,114	454	--	--	--	--	--	--	--	--
CYPRESS	8,887	1,965	--	--	--	--	--	--	--	--
EASTERN REDCEDAR	836	247	--	--	51	17	--	--	63	19
TOTAL SOFTWOODS	10,837	2,666	--	--	51	17	--	--	63	19
HARDWOODS:										
SELECT WHITE OAKS	122,466	33,057	4,509	1,072	8,396	2,541	7,347	2,260	3,419	855
OTHER WHITE OAKS	6,954	1,666	198	46	370	108	291	92	155	38
SELECT RED OAKS	44,135	7,582	1,707	255	2,593	369	2,780	610	1,270	206
RED OAKS	55,212	9,439	2,368	343	3,618	499	3,633	814	1,786	281
OTHER RED OAKS	18,563	3,352	177	26	276	38	265	61	132	20
HICKORY A	15,802	3,350	371	61	511	78	1,838	554	340	79
HICKORY B	5,523	1,164	190	31	264	40	918	276	173	39
HARD MAPLE	3,152	698	138	27	226	45	327	99	88	18
SOFT MAPLE	7,986	3,552	873	377	38	20	392	179	304	145
BEECH	759	278	--	--	--	--	253	97	--	--
SWEETGUM	7,190	2,294	--	--	--	--	544	250	--	--
TUPELO AND BLACKGUM	760	351	--	--	--	--	139	62	--	--
ASH	21,699	4,659	1,121	272	1,272	214	1,082	283	822	220
SYCAMORE	14,584	5,881	557	257	127	48	658	277	1,000	464
COTTONWOOD	44,253	20,190	1,291	534	1,835	858	759	356	608	288
RIVER BIRCH	306	145	13	8	--	--	51	26	--	--
YELLOW-POPLAR	1,734	803	--	--	--	--	506	231	--	--
BASSWOOD	38	19	--	1	--	--	--	--	--	--
BLACK WALNUT	2,620	935	114	36	152	51	101	37	139	53
BLACK CHERRY	13	8	--	--	--	--	--	3	--	--
ELM	16,280	4,000	467	93	714	137	986	343	311	58
OTHER HARDWOODS	49,216	9,303	1,503	235	1,801	282	1,182	211	1,106	153
TOTAL HARDWOODS	439,245	112,726	15,597	3,674	22,193	5,328	24,052	7,121	11,653	2,917
ALL SPECIES	450,082	115,392	15,597	3,674	22,244	5,345	24,052	7,121	11,716	2,936

(Table 35 cont. on next page)

(Table 35 cont.)

SPECIES	DUNKLIN		FRANKLIN		GASCONADE		HOWARD		JEFFERSON	
	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER
	CORDS	THOUSAND BD. FT.2/	CORDS	THOUSAND BD. FT.2/	CORDS	THOUSAND BD. FT.2/	CORDS	THOUSAND BD. FT.2/	CORDS	THOUSAND BD. FT.2/
SOFTWOODS:										
SHORTLEAF PINE	--	--	--	--	--	--	--	--	--	--
CYPRESS	2,179	454	--	--	--	--	--	--	--	--
EASTERN REDCEDAR	--	--	215	68	25	11	--	--	203	64
TOTAL SOFTWOODS	2,179	454	215	68	25	11	--	--	203	64
HARDWOODS:										
SELECT WHITE OAKS	1,114	149	8,170	1,694	8,099	2,153	2,961	930	21,723	7,405
OTHER WHITE OAKS	209	27	305	66	349	90	124	38	890	307
SELECT RED OAKS	769	132	4,132	614	3,056	459	848	125	5,003	942
RED OAKS	431	76	5,358	831	4,109	615	1,167	170	6,580	1,260
OTHER RED OAKS	2,450	425	371	58	297	45	85	12	461	88
HICKORY A	736	139	828	147	535	82	159	27	806	166
HICKORY B	54	9	421	75	277	42	81	14	413	85
HARD MAPLE	--	--	355	67	214	41	77	17	380	84
SOFT MAPLE	50	17	177	81	63	32	772	327	392	183
BEECH	--	--	--	--	--	--	--	--	38	12
SWEETGUM	859	209	--	--	--	--	--	--	13	6
TUPELO AND BLACKGUM	13	6	--	--	--	--	--	--	25	13
ASH	793	145	1,692	322	1,081	195	553	124	1,467	287
SYCAMORE	853	230	114	54	25	15	1,013	466	608	281
COTTONWOOD	13	10	2,886	1,342	2,051	951	1,367	575	987	459
RIVER BIRCH	--	3	--	--	--	1	76	30	13	3
YELLOW-POPLAR	--	--	--	--	--	--	--	--	215	101
BASSWOOD	--	--	--	--	--	--	25	9	13	8
BLACK WALNUT	--	--	266	93	51	18	253	85	114	42
BLACK CHERRY	--	--	--	--	--	--	--	--	13	3
ELM	773	157	1,199	281	619	116	400	125	903	207
OTHER HARDWOODS	4,586	964	2,500	373	1,521	221	973	177	1,567	224
TOTAL HARDWOODS	13,703	2,698	28,774	6,098	22,347	5,076	10,934	3,251	42,624	12,166
ALL SPECIES	15,882	3,152	28,989	6,166	22,372	5,087	10,934	3,251	42,827	12,230

(Table 35 cont. on next page)

(Table 35 cont.)

SPECIES	MISSISSIPPI		MONITEAU		MONTGOMERY		NEW MADRID		OSAGE	
	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER
	CORDS	THOUSAND BD. FT.2/	CORDS	THOUSAND BD. FT.2/	CORDS	THOUSAND BD. FT.2/	CORDS	THOUSAND BD. FT.2/	CORDS	THOUSAND BD. FT.2/
SOFTWOODS:										
SHORTLEAF PINE	--	--	--	--	--	--	--	--	--	--
CYPRESS	1,308	356	--	--	--	--	1,157	257	--	--
EASTERN REDCEDAR	--	--	--	--	--	--	--	--	127	39
TOTAL SOFTWOODS	1,308	356	--	--	--	--	1,157	257	127	39
HARDWOODS:										
SELECT WHITE OAKS	1,406	337	2,601	742	7,143	1,626	768	117	8,056	1,977
OTHER WHITE OAKS	280	64	121	32	314	71	141	22	360	86
SELECT RED OAKS	338	77	934	158	1,762	246	337	68	3,040	500
RED OAKS	224	54	1,336	210	2,483	336	204	43	4,184	664
OTHER RED OAKS	1,736	326	100	15	194	27	1,908	363	303	47
HICKORY A	648	205	151	22	551	76	538	146	610	111
HICKORY B	67	24	79	11	278	37	42	15	316	57
HARD MAPLE	--	--	61	14	127	25	--	--	202	40
SOFT MAPLE	286	115	190	63	38	22	871	389	937	438
BEECH	--	--	--	--	--	--	--	--	--	--
SWEETGUM	873	315	--	--	--	--	821	273	--	--
TUPELO AND BLACKGUM	76	32	--	--	--	--	38	23	--	--
ASH	983	248	659	180	827	146	920	218	1,438	330
SYCAMORE	740	238	1,000	457	127	59	1,103	373	1,013	467
COTTONWOOD	6,823	3,172	987	414	2,696	1,259	6,785	2,946	1,076	502
RIVER BIRCH	13	6	13	6	--	1	--	--	--	--
YELLOW-POPLAR	--	--	--	--	--	--	--	--	--	--
BASSWOOD	--	--	--	--	--	1	--	--	--	--
BLACK WALNUT	--	--	165	61	89	33	--	--	278	101
BLACK CHERRY	--	--	--	--	--	--	--	--	--	--
ELM	695	147	205	41	637	157	1,042	245	775	148
OTHER HARDWOODS	4,904	1,138	528	79	1,469	252	4,943	1,096	1,868	284
TOTAL HARDWOODS	20,092	6,498	9,130	2,505	18,735	4,374	20,461	6,337	24,456	5,752
ALL SPECIES	21,400	6,854	9,130	2,505	18,735	4,374	21,618	6,594	24,583	5,791

(Table 35 cont. on next page)

(Table 35 cont.)

SPECIES	PEMISCOT		PERRY		ST. CHARLES		ST. LOUIS		STE. GENEVIEVE	
	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER
	CORDS	THOUSAND BD. FT.2/	CORDS	THOUSAND BD. FT.2/	CORDS	THOUSAND BD. FT.2/	CORDS	THOUSAND BD. FT.2/	CORDS	THOUSAND BD. FT.2/
SOFTWOODS:										
SHORTLEAF PINE	--	--	--	--	--	--	--	--	1,114	454
CYPRESS	1,069	223	--	--	--	--	--	--	25	10
EASTERN REDCEDAR	--	--	--	--	--	--	25	4	127	25
TOTAL SOFTWOODS	1,069	223	--	--	--	--	25	4	1,266	489
HARDWOODS:										
SELECT WHITE OAKS	693	78	8,244	2,579	3,391	858	1,819	390	7,662	2,108
OTHER WHITE OAKS	70	9	333	107	119	33	69	16	330	89
SELECT RED OAKS	246	25	2,718	548	1,432	216	1,315	249	3,594	702
RED OAKS	102	15	3,595	737	1,789	280	1,746	335	4,891	950
OTHER RED OAKS	1,183	176	254	53	136	23	132	25	350	66
HICKORY A	337	65	530	120	267	42	189	28	974	262
HICKORY B	24	3	269	61	131	23	94	16	509	133
HARD MAPLE	--	--	229	57	144	27	95	20	211	44
SOFT MAPLE	29	10	494	228	962	440	291	135	114	50
BEECH	--	--	177	67	--	--	--	--	51	19
SWEETGUM	493	134	152	69	--	--	--	--	25	10
TUPELO AND BLACKGUM	114	54	76	33	--	--	13	6	38	18
ASH	582	111	903	198	990	210	591	123	1,133	242
SYCAMORE	544	133	253	115	1,000	462	962	441	1,228	562
COTTONWOOD	278	106	1,228	569	6,544	3,048	1,443	673	899	424
RIVER BIRCH	--	--	38	19	--	3	13	5	13	5
YELLOW-POPLAR	--	3	266	124	--	--	--	--	51	25
BASSWOOD	--	--	--	--	--	--	--	--	--	--
BLACK WALNUT	--	--	38	16	392	141	215	78	76	28
BLACK CHERRY	--	--	--	--	--	--	--	--	--	--
ELM	704	121	564	139	670	160	473	124	752	196
OTHER HARDWOODS	3,555	759	1,298	188	2,786	518	1,182	234	997	127
TOTAL HARDWOODS	8,954	1,802	21,659	6,027	20,753	6,484	10,642	2,898	23,898	6,060
ALL SPECIES	10,023	2,025	21,659	6,027	20,753	6,484	10,667	2,902	25,164	6,549

(Table 35 cont. on next page)

(Table 35 cont.)

SPECIES	SCOTT		STODDARD		WARREN	
	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER	GROWING STOCK	SAWTIMBER
	CORDS	THOUSAND BD. FT.2/	CORDS	THOUSAND BD. FT.2/	CORDS	THOUSAND BD. FT.2/
SOFTWOODS:						
SHORTLEAF PINE	--	--	--	--	--	--
CYPRESS	526	114	2,623	551	--	--
EASTERN REDCEDAR	--	--	--	--	--	--
TOTAL SOFTWOODS	526	114	2,623	551	--	--
HARDWOODS:						
SELECT WHITE OAKS	2,934	471	5,506	782	6,505	1,933
OTHER WHITE OAKS	549	89	1,115	157	262	79
SELECT RED OAKS	1,688	349	2,559	437	2,014	295
RED OAKS	1,138	235	1,858	302	2,612	389
OTHER RED OAKS	2,731	629	4,832	800	190	29
HICKORY A	1,424	273	3,099	618	360	55
HICKORY B	255	48	483	97	185	28
HARD MAPLE	76	30	25	9	177	34
SOFT MAPLE	227	97	359	142	127	62
BEECH	139	52	101	31	--	--
SWEETGUM	1,441	530	1,969	498	--	--
TUPELO AND BLACKGUM	89	37	139	67	--	--
ASH	474	116	1,375	298	941	177
SYCAMORE	553	193	1,106	289	--	--
COTTONWOOD	494	224	190	77	3,013	1,403
RIVER BIRCH	25	15	38	14	--	--
YELLOW-POPLAR	468	213	228	106	--	--
BASSWOOD	--	--	--	--	--	--
BLACK WALNUT	--	--	--	--	177	62
BLACK CHERRY	--	--	--	2	--	--
ELM	1,359	486	1,415	380	617	139
OTHER HARDWOODS	1,553	332	5,433	1,131	1,961	325
TOTAL HARDWOODS	17,617	4,419	31,830	6,231	19,141	5,010
ALL SPECIES	18,143	4,533	34,453	6,782	19,141	5,010

1/ See glossary for timber removals from growing stock (page 5).
2/ International 1/4-inch rule.

Table 36.--*Annual mortality of growing stock and sawtimber on commercial forest land, by cause and softwoods and hardwoods, Riverborder, Missouri, 1971*

CAUSE	GROWING STOCK			SAWTIMBER		
	ALL SPECIES	SOFTWOODS	HARDWOODS	ALL SPECIES	SOFTWOODS	HARDWOODS
	THOUSAND CUBIC FEET			THOUSAND BOARD FEET[1/]		
DISEASE	952	--	952	2,127	--	2,127
WEATHER	446	--	446	1,670	--	1,670
SUPPRESSION	45	--	45	--	--	--
UNKNOWN AND OTHER	758	--	758	2,296	--	2,296
LOGGING	165	--	165	849	--	849
ALL CAUSES	2,366	--	2,366	6,942	--	6,942

1/ INTERNATIONAL 1/4-INCH RULE.

Table 37.--*Annual mortality of growing stock and sawtimber on commercial forest land, by species, Riverborder, Missouri, 1971*

SPECIES	GROWING STOCK	SAWTIMBER
	THOUSAND CUBIC FEET	THOUSAND BOARD FEET[1/]
HARDWOODS:		
SELECT WHITE OAKS	159	126
OTHER WHITE OAKS	79	88
SELECT RED OAKS	147	527
RED OAKS	71	375
OTHER RED OAKS	109	483
SOFT MAPLE	104	159
ASH	164	477
COTTONWOOD	435	2,385
BLACK WALNUT	147	705
BLACK CHERRY	52	--
ELM	457	694
OTHER HARDWOODS	442	923
TOTAL HARDWOODS	2,366	6,942

1/ INTERNATIONAL 1/4-INCH RULE.

Table 38.--*Output of timber products by source of material and softwoods and hardwoods, Riverborder, Missouri, 1969*

PRODUCT AND SPECIES GROUP	STANDARD UNIT[1/]	TOTAL		ROUNDWOOD PRODUCTS				PLANT BYPRODUCTS	
				GROWING STOCK		NONGROWING STOCK			
		NO. OF UNITS	M CU. FT.	NO. OF UNITS	M CU. FT.	NO. OF UNITS	M CU. FT.	NO. OF UNITS	M CU. FT.
SAW LOGS:	M BD. FT.								
SOFTWOOD		829	152	829	152	--	--	--	--
HARDWOOD		51,056	8,393	42,827	7,050	8,229	1,343	--	--
TOTAL		51,885	8,545	43,656	7,202	8,229	1,343	--	--
VENEER LOGS:	M BD. FT.								
SOFTWOOD		--	--	--	--	--	--	--	--
HARDWOOD		1,520	336	1,168	259	352	77	--	--
TOTAL		1,520	336	1,168	259	352	77	--	--
COOPERAGE LOGS:	M BD. FT.								
SOFTWOOD		--	--	--	--	--	--	--	--
HARDWOOD		21,758	3,581	19,703	3,243	2,055	338	--	--
TOTAL		21,758	3,581	19,703	3,243	2,055	338	--	--
PULPWOOD:	STD. CORDS								
SOFTWOOD		--	--	--	--	--	--	--	--
HARDWOOD		32,737	2,570	3,428	260	1,688	128	27,621	2,182
TOTAL		32,737	2,570	3,428	260	1,688	128	27,621	2,182
MINE TIMBERS:	M CU. FT.								
SOFTWOOD		--	--	--	--	--	--	--	--
HARDWOOD		45	45	33	33	12	12	--	--
TOTAL		45	45	33	33	12	12	--	--
POSTS:	M PIECES								
SOFTWOOD		26	14	18	10	8	4	--	--
HARDWOOD		187	89	140	67	47	22	--	--
TOTAL		213	103	158	77	55	26	--	--
CHARCOAL WOOD:	STD. CORDS								
SOFTWOOD		14	1	--	--	--	--	14	1
HARDWOOD		22,899	1,586	7,148	495	15,365	1,064	386	27
TOTAL		22,913	1,587	7,148	495	15,365	1,064	400	28
OTHER: 2/	M CU. FT.								
SOFTWOOD		27	27	--	--	--	--	27	27
HARDWOOD		1,029	1,029	153	153	9	9	867	867
TOTAL		1,056	1,056	153	153	9	9	894	894
FUELWOOD:	STD. CORDS								
SOFTWOOD		845	51	268	16	516	31	61	4
HARDWOOD		85,562	5,559	22,150	1,439	47,166	3,064	16,246	1,056
TOTAL		86,407	5,610	22,418	1,455	47,682	3,095	16,307	1,060
ALL PRODUCTS:	M CU. FT.								
SOFTWOOD		245	245	178	178	35	35	32	32
HARDWOOD		23,188	23,188	12,999	12,999	6,057	6,057	4,132	4,132
TOTAL		23,433	23,433	13,177	13,177	6,092	6,092	4,164	4,164

1/ M (MEANING THOUSAND) BOARD FEET BY INTERNATIONAL 1/4-INCH RULE. CORDS ARE ON ROUGH WOOD, 128-CUBIC-FOOT BASIS.

2/ OTHER (INDUSTRIAL PRODUCTION) INCLUDES HANDLE BOLTS, SHAVING BOLTS, HEADING STOCK, ETC.

Table 39.--*Forest products harvested by ownership class and product, Riverborder, Missouri, 1969*

OWNERSHIP CLASS	SAW LOGS	COOPERAGE LOGS	VENEER LOGS	PULP-WOOD	CHARCOAL WOOD	POSTS	FUEL-WOOD	MINE TIMBERS	HANDLE BOLTS	MISCELLANEOUS
	M BD.FT.1/	M BD.FT.1/	M BD.FT.1/	CORDS2/	CORDS2/	M PIECES	CORDS2/	M CU.FT.	M BD.FT.1/	M CU.FT.
FEDERAL:										
NATIONAL FOREST:										
SOFTWOODS	4	--	--	--	--	--	--	--	--	--
HARDWOODS	89	--	--	--	--	--	--	--	--	--
TOTAL	93	--	--	--	--	--	--	--	--	--
STATE:										
SOFTWOODS	--	--	--	--	--	8	--	--	--	--
HARDWOODS	224	43	--	--	40	--	--	--	--	--
TOTAL	224	43	--	--	40	8	--	--	--	--
PRIVATE:										
FARM AND OTHER:										
SOFTWOODS	825	--	--	--	--	18	784	--	--	--
HARDWOODS	50,743	21,715	1,520	5,116	22,473	187	69,316	45	622	64
TOTAL	51,568	21,715	1,520	5,116	22,473	205	70,100	45	622	64
ALL OWNERS:										
SOFTWOODS	829	--	--	--	--	26	784	--	--	--
HARDWOODS	51,056	21,758	1,520	5,116	22,513	187	69,316	45	622	64
TOTAL	51,885	21,758	1,520	5,116	22,513	213	70,100	45	622	64

1/ INTERNATIONAL 1/4-INCH RULE.
2/ STANDARD CORDS, ROUGH WOOD BASIS.

Table 40.--*Volume of primary plant residue, by kind of material and type of use, Riverborder, Missouri, 1969*
(Thousand cubic feet)

SOURCE INDUSTRY AND KIND OF RESIDUE	VOLUME BY TYPE OF USE								
	FIBER1/	CHARCOAL		FUEL2/		OTHER3/		NOT USED4/	
	HARD-WOODS	SOFT-WOODS	HARD-WOODS	SOFT-WOODS	HARD-WOODS	SOFT-WOODS	HARD-WOODS	SOFT-WOODS	HARD-WOODS
LUMBER:									
COARSE	1,497	1	6	2	265	2	10	13	544
FINE	--	--	--	2	267	25	475	4	881
TOTAL	1,497	1	6	4	532	27	485	17	1,425
ALL OTHER:									
COARSE	479	--	21	--	515	--	--	--	97
FINE	206	--	--	--	9	--	382	--	1,212
TOTAL	685	--	21	--	524	--	382	--	1,309
ALL INDUSTRIES:									
COARSE	1,976	1	27	2	780	2	10	13	641
FINE	206	--	--	2	276	25	857	4	2,093
TOTAL	2,182	1	27	4	1,056	27	867	17	2,734

1/ FOR MANUFACTURE OF PULP, HARDBOARD, OR ROOFING FELT.
2/ ALL RESIDUE USED FOR INDUSTRIAL OR DOMESTIC FUEL WHETHER SOLD OR GIVEN AWAY.
3/ INCLUDES USES SUCH AS LIVESTOCK BEDDING, MULCH, SMALL DIMENSION, AND SPECIALTY ITEMS.
4/ INCLUDES RESIDUE BURNED AS WASTE.

Table 41.--*Timber products output from roundwood, by species and product, Riverborder, Missouri, 1969*

SPECIES	SAW LOGS		VENEER LOGS		COOPERAGE LOGS		CHARCOAL WOOD		OTHER PRODUCTS 3/	ALL PRODUCTS
	M BD. FT. 1/	M CU. FT.	M BD. FT. 1/	M CU. FT.	M BD. FT. 1/	M CU. FT.	CORDS 2/	M CU. FT.	M CU. FT.	M CU. FT.
SOFTWOODS:										
SHORTLEAF PINE	439	76	--	--	--	--	--	--	6	82
CYPRESS	135	24	--	--	--	--	--	--	1	25
EASTERN REDCEDAR	214	45	--	--	--	--	--	--	54	99
OTHER SOFTWOODS	41	7	--	--	--	--	--	--	--	7
TOTAL SOFTWOODS	829	152	--	--	--	--	--	--	61	213
HARDWOODS:										
WHITE OAKS	2,541	455	45	10	21,568	3,552	14,005	978	3,167	8,162
RED OAKS	4,884	870	--	--	--	--	2,492	171	306	1,347
BLACK OAK	6,744	1,203	--	--	--	--	3,838	266	481	1,950
HICKORY	1,169	196	213	48	--	--	1,927	132	314	690
HARD MAPLE	167	26	--	--	--	--	8	--	--	26
SOFT MAPLE	3,639	574	26	6	10	1	5	--	92	673
BEECH	245	42	--	--	--	--	--	--	3	45
SWEETGUM	1,453	230	28	6	101	17	--	--	--	253
TUPELO AND BLACKGUM	390	60	--	--	--	--	25	1	--	61
ASH	1,333	229	--	--	10	1	92	4	160	394
SYCAMORE	5,513	871	80	18	9	1	15	1	15	906
COTTONWOOD	18,295	2,821	465	106	10	1	--	--	206	3,134
RIVER BIRCH	133	19	--	--	10	1	--	--	4	24
YELLOW-POPLAR	879	138	20	4	--	--	--	--	--	142
BASSWOOD	22	3	--	--	--	--	--	--	--	3
BLACK WALNUT	1,313	289	643	138	--	--	12	--	--	427
BLACK CHERRY	9	1	--	--	--	--	12	--	--	1
ELM	1,609	253	--	--	40	7	82	6	221	487
OTHER HARDWOODS	718	113	--	--	--	--	--	--	218	331
TOTAL HARDWOODS	51,056	8,393	1,520	336	21,758	3,581	22,513	1,559	5,187	19,056
ALL SPECIES	51,885	8,545	1,520	336	21,758	3,581	22,513	1,559	5,248	19,269

1/ INTERNATIONAL 1/4-INCH RULE.
2/ STANDARD CORDS, ROUGH WOOD BASIS.
3/ INCLUDES POSTS, FUELWOOD, SHAVING BOLTS, HEADING BOLTS, ETC.

Table 42.--*Average annual managed harvest for 1972-1981 from harvest cuttings and thinnings, on commercial forest land, by species and kind of material, Riverborder, Missouri*

Species	Growing stock[1]			Saw timber[1]	Rough and rotten trees		
	Total	Poletimber trees	Sawtimber trees	Total	Total	Short-log trees	Other
	Cords			Thousand board feet[2]	Cords		
Softwoods							
Shortleaf pine	139	--	139	35	--	--	--
Cypress	7,012	25	6,987	2,563	2,228	494	1,734
Eastern redcedar	8,456	5,329	3,127	1,289	3,506	772	2,734
Total softwoods	15,607	5,354	10,253	3,887	5,734	1,266	4,468
Hardwoods							
Select white oak	164,013	40,089	123,924	40,644	35,392	8,215	27,177
Other white oak	45,240	29,658	15,582	5,451	15,898	3,101	12,797
Select red oak	41,038	3,671	37,367	13,975	12,265	3,025	9,240
Red oak	34,456	5,937	28,519	10,263	9,937	2,671	7,266
Other red oak	2,659	1,013	1,646	685	3,936	949	2,987
Hickory A	30,266	9,114	21,152	8,121	8,696	1,418	7,278
Hickory B	15,367	8,013	7,354	2,530	2,519	127	2,392
Hard maple	6,785	4,633	2,152	544	8,735	532	8,203
Soft maple	7,949	1,962	5,987	2,184	4,316	519	3,797
Beech	25	--	25	11	722	--	722
Sweetgum	3,102	13	3,089	1,364	975	--	975
Tupelo and blackgum	3,962	1,987	1,975	888	4,012	1,468	2,544
Ash	20,000	7,266	12,734	4,708	10,215	2,063	8,152
Sycamore	13,861	1,215	12,646	4,781	1,393	203	1,190
Cottonwood	20,456	2,089	18,367	7,608	1,380	329	1,051
River birch	3,114	392	2,722	1,225	278	--	278
Yellow poplar	1,279	114	1,165	266	127	--	127
Basswood	519	--	519	162	--	--	--
Black walnut	5,304	1,190	4,114	1,151	2,392	696	1,696
Black cherry	848	557	291	108	418	--	418
Elm	11,266	4,810	6,456	1,772	11,354	2,405	8,949
Other hardwoods	46,608	15,570	31,038	11,790	14,355	2,456	11,899
Noncommercial species	--	--	--	--	203	--	203
Total hardwoods	478,117	139,293	338,824	120,231	149,518	30,177	119,341
All species	493,724	144,647	349,077	124,118	155,252	31,443	123,809

[1]Cuttings of less than 3 cords per acre are excluded.
[2]International 1/4-inch rule.

Table 43.--*Average annual managed harvest of growing stock for 1972-1981 from harvest cuttings and thinnings, on commercial forest land, by species and forest type, Riverborder, Missouri*[1/]
(Thousand cubic feet)

SPECIES GROUP	TOTAL	SHORTLEAF PINE	EASTERN REDCEDAR	REDCEDAR HARDWD	PINE OAK	POST OAK	BLACK OAK	WHITE OAK	OAK-GUM CYPRESS	ELM-ASH CTNWD	COTTON WOOD	MAPLE BEECH
SOFTWOODS												
SHORTLEAF PINE	11	--	--	--	--	--	--	--	--	--	--	11
CYPRESS	554	--	--	--	--	--	--	--	443	111	--	--
EASTERN REDCEDAR	668	--	346	105	--	24	--	165	--	28	--	--
TOTAL SOFTWOODS	1233	--	346	105	--	24	--	165	443	139	--	11
HARDWOODS												
SELECT WHITE OAK	12957	--	142	309	--	251	1632	9917	71	453	--	189
OTHER WHITE OAK	3574	--	--	51	--	2441	398	670	--	8	--	6
SELECT RED OAK	3242	--	40	45	--	309	1725	871	--	22	--	230
RED OAK	2722	--	63	112	--	67	1452	790	--	147	--	82
OTHER RED OAK	210	--	--	--	--	27	54	6	86	37	--	--
HICKORY A	2341	--	--	--	--	7	1005	667	257	434	--	69
HICKORY B	1214	--	--	14	--	150	129	452	204	19	--	246
HARD MAPLE	536	--	--	--	--	--	94	282	--	--	--	160
SOFT MAPLE	628	--	--	--	--	--	--	4	62	558	--	--
BEECH	2	--	--	--	--	--	--	--	--	--	--	2
SWEETGUM	246	--	--	--	--	--	48	--	--	192	--	6
TUPELO AND BLACKGUM	313	--	--	--	--	--	72	22	161	19	--	39
ASH	1580	--	--	65	--	--	166	313	96	937	3	--
SYCAMORE	1095	--	--	--	--	--	9	--	127	728	--	231
COTTONWOOD	1814	--	--	--	--	--	--	--	--	1223	343	--
RIVER BIRCH	246	--	--	--	--	--	--	--	102	144	--	--
YELLOW POPLAR	101	--	--	--	--	--	65	26	--	--	--	10
BASSWOOD	41	--	--	--	--	--	--	--	--	--	--	41
BLACK WALNUT	414	--	14	--	--	7	22	209	--	108	--	54
BLACK CHERRY	67	--	--	--	--	7	35	4	--	16	--	--
ELM	850	--	--	78	--	78	40	62	28	224	--	340
OTHER HARDWOODS	3682	--	--	32	--	48	42	163	109	3220	6	3
TOTAL HARDWOODS	37771	--	259	706	--	3442	7038	14465	1295	8489	405	1672
TOTAL ALL SPECIES	39004	--	605	811	--	3466	7038	14630	1738	8628	405	1683

1/ CUTTINGS OF LESS THAN 240 CUBIC FEET PER ACRE ARE EXCLUDED.

Table 44.--*Average annual managed harvest of growing stock for 1972-1981 from harvest cuttings and thinnings, on commercial forest land, by species and stand-volume class, Riverborder, Missouri*
(Thousand cubic feet)

SPECIES GROUP	STAND VOLUME 1/ CLASS (CU.FT. PER ACRE)					
	TOTAL	240-399	400-799	800-1199	1200-1599	1600+
SOFTWOODS						
SHORTLEAF PINE	11	11	--	--	--	--
CYPRESS	554	32	45	7	143	327
EASTERN REDCEDAR	668	99	78	465	26	--
TOTAL SOFTWOODS	1233	142	123	472	169	327
HARDWOODS						
SELECT WHITE OAK	12957	398	2704	5677	2593	1585
OTHER WHITE OAK	3574	137	813	1199	1277	148
SELECT RED OAK	3242	82	822	1330	732	276
RED OAK	2722	234	582	575	632	699
OTHER RED OAK	210	29	61	113	7	--
HICKORY A	2391	53	909	653	145	631
HICKORY B	1214	49	165	786	214	--
HARD MAPLE	536	81	41	149	120	145
SOFT MAPLE	628	--	29	23	270	306
BEECH	2	--	2	--	--	--
SWEETGUM	245	1	5	141	51	47
TUPELO AND BLACKGUM	313	15	33	44	151	70
ASH	1580	49	550	358	431	192
SYCAMORE	1095	30	201	273	220	371
COTTONWOOD	1616	--	437	405	27	747
RIVER BIRCH	246	--	16	139	91	--
YELLOW POPLAR	101	--	10	26	--	65
BASSWOOD	41	--	--	--	--	41
BLACK WALNUT	419	40	161	61	115	42
BLACK CHERRY	67	7	25	--	35	--
ELM	890	47	65	314	240	224
OTHER HARDWOODS	3682	11	329	1481	820	1041
TOTAL HARDWOODS	37771	1263	7960	13747	8171	6630
TOTAL ALL SPECIES	39004	1405	8083	14219	8340	6957

1/ CUTTINGS OF LESS THAN 240 CUBIC FEET PER ACRE ARE EXCLUDED.

Table 45.--*Average annual managed harvest for 1972-1981, by harvest cuttings of growing stock on commercial forest land, by species and stand-volume class, Riverborder, Missouri*
(Thousand cubic feet)

SPECIES GROUP	STAND VOLUME CLASS 1/ (CU.FT. PER ACRE)					
	TOTAL	240-399	400-799	800-1199	1200-1599	1600+
SOFTWOODS						
CYPRESS	393	29	--	--	37	327
EASTERN REDCEDAR	648	94	63	465	26	--
TOTAL SOFTWOODS	1041	123	63	465	63	327
HARDWOODS						
SELECT WHITE OAK	12093	227	2072	5616	2593	1585
OTHER WHITE OAK	3529	104	801	1199	1277	148
SELECT RED OAK	3157	45	790	1314	732	276
RED OAK	2409	139	369	570	632	699
OTHER RED OAK	155	--	61	87	7	--
HICKORY A	2181	14	743	648	145	631
HICKORY B	1070	30	55	771	214	--
HARD MAPLE	473	18	41	149	120	145
SOFT MAPLE	420	--	8	--	133	279
SWEETGUM	244	--	5	141	51	47
TUPELO AND BLACKGUM	140	3	28	39	--	70
ASH	1377	11	437	358	379	192
SYCAMORE	699	21	180	115	220	163
COTTENWOOD	612	--	290	254	--	68
RIVER BIRCH	246	--	16	139	91	--
YELLOW POPLAR	65	--	--	--	--	65
BASSWOOD	41	--	--	--	--	41
BLACK WALNUT	389	15	161	56	115	42
BLACK CHERRY	58	7	16	--	35	--
ELM	774	32	55	269	233	185
OTHER HARDWOODS	1033	8	285	277	231	232
TOTAL HARDWOODS	31165	674	6413	12002	7208	4868
TOTAL ALL SPECIES	32206	797	6476	12467	7271	5195

1/ CUTTINGS OF LESS THAN 240 CUBIC FEET PER ACRE ARE EXCLUDED.

Table 46.--*Average annual managed harvest for 1972-1981, by thinnings of growing stock on commercial forest land, by species and stand-volume class, Riverborder, Missouri*

(Thousand cubic feet)

SPECIES GROUP	STAND VOLUME CLASS[1/] (CU.FT. PER ACRE)					
	TOTAL	240-399	400-799	800-1199	1200-1599	1600+
SOFTWOODS						
SHORTLEAF PINE	11	11	--	--	--	--
CYPRESS	161	3	45	7	106	--
EASTERN REDCEDAR	20	5	15	--	--	--
TOTAL SOFTWOODS	192	19	60	7	106	--
HARDWOODS						
SELECT WHITE OAK	864	171	632	61	--	--
OTHER WHITE OAK	45	33	12	--	--	--
SELECT RED OAK	85	37	32	16	--	--
RED OAK	313	95	213	5	--	--
OTHER RED OAK	55	29	--	26	--	--
HICKORY A	210	39	166	5	--	--
HICKORY B	144	19	110	15	--	--
HARD MAPLE	63	63	--	--	--	--
SOFT MAPLE	208	--	21	23	137	27
BEECH	2	--	2	--	--	--
SWEETGUM	1	1	--	--	--	--
TUPELO AND BLACKGUM	173	12	5	5	151	--
ASH	203	38	113	--	52	--
SYCAMORE	396	9	21	158	--	208
COTTENWOOD	1004	--	147	151	27	679
YELLOW POPLAR	36	--	10	26	--	--
BLACK WALNUT	30	25	--	5	--	--
BLACK CHERRY	9	--	9	--	--	--
ELM	116	15	10	45	7	39
OTHER HARDWOODS	2649	3	44	1204	589	809
TOTAL HARDWOODS	6606	589	1547	1745	963	1762
TOTAL ALL SPECIES	6798	608	1607	1752	1069	1762

1/ CUTTINGS OF LESS THAN 240 CUBIC FEET PER ACRE ARE EXCLUDED.

Table 47.--*Average annual managed harvest of sawtimber*[1/] *for 1972-1981 from harvest cuttings and thinnings, on commercial forest land, by species and forest type, Riverborder, Missouri*
(Thousand board feet)[2/]

SPECIES GROUP	TOTAL	S.LEAF PINE	EASTERN REDCEDAR	REDCEDAR HARDWD	PINE OAK	POST OAK	BLACK OAK	WHITE OAK	OAK-GUM CYPRESS	ELM-ASH CTNWD	COTTON WOOD	MAPLE BEECH
SOFTWOODS												
SHORTLEAF PINE	43	--	--	--	3	--	--	--	--	--	--	15
CYPRESS	2570	--	--	--	--	--	--	--	2070	500	--	--
EASTERN REDCEDAR	1360	--	791	197	--	--	--	251	--	121	--	--
TOTAL SOFTWOODS	3973	--	791	197	3	--	--	251	2070	621	--	15
HARDWOODS												
SELECT WHITE OAK	41705	--	331	987	33	475	6247	3[illegible]	[illegible]	[illegible]	--	443
OTHER WHITE OAK	5734	--	--	286	--	2684	1228	1531	--	--	--	--
SELECT RED OAK	14544	--	113	193	--	1457	4352	2151	324	145	--	410
RED OAK	11091	--	110	412	26	441	4357	2031	186	390	--	418
OTHER RED OAK	767	--	--	--	--	--	252	73	297	146	--	--
HICKORY A	4269	--	--	19	--	69	1348	2420	1154	1227	--	62
HICKORY B	2607	--	--	74	--	56	50	717	586	89	--	1035
HARD MAPLE	544	--	--	--	--	--	--	359	--	--	--	185
SOFT MAPLE	2184	--	--	--	--	--	--	--	313	1871	--	--
BEECH	11	--	--	--	--	--	--	--	--	--	--	11
SWEETGUM	1373	--	--	--	--	--	161	--	4	1169	--	14
TUPELO AND BLACKGUM	942	--	--	--	3	--	415	--	441	33	--	--
ASH	4727	--	--	51	--	--	700	670	135	3166	--	--
SYCAMORE	4869	--	--	71	--	--	36	17	748	3150	--	487
COTTONWOOD	7608	--	--	--	--	--	--	--	--	5982	1626	--
RIVER BIRCH	1225	--	--	--	--	--	--	--	484	736	--	--
YELLOW POPLAR	266	--	--	--	--	--	135	104	--	--	--	27
BASSWOOD	162	--	--	--	--	--	--	--	--	--	--	162
BLACK WALNUT	1169	--	77	--	--	--	134	52	--	236	--	170
BLACK CHERRY	108	--	--	--	--	35	--	--	--	73	--	--
ELM	1772	--	--	--	--	14	166	5[illegible]	50	525	--	454
OTHER HARDWOODS	11793	--	--	46	--	38	--	26[illegible]	358	11024	--	14
TOTAL HARDWOODS	123467	--	631	2188	61	5782	27475	43274	5605	31484	1626	5114
TOTAL ALL SPECIES	127440	--	1422	2385	64	5782	27475	43525	7675	32105	1626	5129

1/ CUTTINGS OF LESS THAN 3 CORDS PER ACRE OR THE EQUIVALENT IN BOARD FEET ARE INCLUDED.
2/ INTERNATIONAL 1/4-INCH RULE.

Table 48.--*Average annual managed harvest of sawtimber[1] for 1972-1981 from harvest cuttings and thinnings, on commercial forest land, by species and stand-volume class, Riverborder, Missouri*
(Thousand board feet)[2]

SPECIES GROUP	STAND VOLUME CLASS (BD.FT. PER ACRE)						
	TOTAL	0-1499	1500-2499	2500-4999	5000-7499	7500-9999	10000+
SOFTWOODS							
SHORTLEAF PINE	43	43	--	--	--	--	--
CYPRESS	2570	348	169	550	416	--	1087
EASTERN REDCEDAR	1360	647	713	--	--	--	--
TOTAL SOFTWOODS	3973	1038	882	550	416	--	1087
HARDWOODS							
SELECT WHITE OAK	41705	9919	8650	19139	3116	656	225
OTHER WHITE OAK	5734	2315	1775	961	--	683	--
SELECT RED OAK	14544	3519	3445	4629	2951	--	--
RED OAK	11091	2439	1420	3330	1623	2279	--
OTHER RED OAK	767	292	223	252	--	--	--
HICKORY A	8269	853	2235	1763	2025	237	1156
HICKORY B	2607	352	1580	675	--	--	--
HARD MAPLE	544	341	106	97	--	--	--
SOFT MAPLE	2184	--	31	884	362	--	907
BEECH	11	11	--	--	--	--	--
SWEETGUM	1373	10	34	1169	--	160	--
TUPELO AND BLACKGUM	942	95	120	320	407	--	--
ASH	4727	960	497	1071	1734	--	465
SYCAMORE	4869	1027	546	598	811	--	1897
COTTENWOOD	7608	437	1236	2217	--	--	3718
RIVER BIRCH	1225	--	--	1225	--	--	--
YELLOW POPLAR	266	131	--	--	135	--	--
BASSWOOD	162	--	--	162	--	--	--
BLACK WALNUT	1169	575	197	397	--	--	--
BLACK CHERRY	108	108	--	--	--	--	--
ELM	1772	168	472	807	293	--	32
OTHER HARDWOODS	11796	359	2256	4557	236	--	4382
TOTAL HARDWOODS	123467	23911	24823	44243	13693	4015	12782
TOTAL ALL SPECIES	127440	24949	25705	44793	14109	4015	13869

1/ CUTTINGS OF LESS THAN 3 CORDS PER ACRE, OR THE EQUIVALENT IN BOARD FEET, ARE INCLUDED.
2/ INTERNATIONAL 1/4-INCH RULE.

Table 49.--*Average annual managed harvest for 1972-1981, by harvest cuttings of sawtimber[1] on commercial forest land, by species and stand-volume class, Riverborder, Missouri*
(Thousand board feet)[2]

SPECIES GROUP	STAND VOLUME CLASS (BD. FT. PER ACRE)						
	TOTAL	[illegible]-	[illegible]-	[illegible]-	[illegible]-	7500- 9999	[illegible]+
SOFTWOODS							
SHORTLEAF PINE	[illegible]	[illegible]	--	--	--	--	--
CYPRESS	1803	120	--	120	418	--	1087
EASTERN REDCEDAR	1217	614	603	--	--	--	--
TOTAL SOFTWOODS	3020	742	603	120	418	--	1087
HARDWOODS							
SELECT WHITE OAK	38291	9438	8134	17718	3115	656	225
OTHER WHITE OAK	5658	2315	1775	885	--	883	--
SELECT RED OAK	14353	3375	3498	4629	2851	--	--
RED OAK	9901	2042	1284	2673	1423	2279	--
OTHER RED OAK	582	145	145	292	--	--	--
HICKORY A	7569	613	1775	1763	2025	237	1156
HICKORY B	2318	222	1421	675	--	--	--
HARD MAPLE	454	251	106	97	--	--	--
SOFT MAPLE	1338	--	--	181	362	--	795
SWEETGUM	1372	9	34	1169	--	160	--
TUPELO AND BLACKGUM	461	54	--	--	407	--	--
ASH	4345	960	115	1071	1734	--	465
SYCAMORE	3248	997	--	474	811	--	966
COTTONWOOD	2791	437	761	1253	--	--	340
RIVER BIRCH	1225	--	--	1225	--	--	--
YELLOW POPLAR	135	--	--	--	135	--	--
BASSWOOD	162	--	--	162	--	--	--
BLACK WALNUT	1108	551	160	397	--	--	--
BLACK CHERRY	108	108	--	--	--	--	--
ELM	1547	168	359	727	293	--	--
OTHER HARDWOODS	3187	306	96	1721	236	--	828
TOTAL HARDWOODS	100153	21031	19567	37072	13693	4015	4775
TOTAL ALL SPECIES	103181	21773	20170	37252	14109	4015	5862

1/ CUTTINGS OF LESS THAN 3 CORDS PER ACRE, OR THE EQUIVALENT IN BOARD FEET, ARE INCLUDED.
2/ INTERNATIONAL 1/4-INCH RULE.

Table 50.--*Average annual managed harvest for 1972-1981, by thinnings of sawtimber[1] on commercial forest land, by species and stand-volume class, Riverborder, Missouri*
(Thousand board feet)[2]

SPECIES GROUP	STAND VOLUME CLASS (BD.FT. PER ACRE)						
	TOTAL	0-1499	1500-2499	2500-4999	5000-7499	7500-9999	10000+
SOFTWOODS							
SHORTLEAF PINE	35	35	--	--	--	--	--
CYPRESS	767	228	169	370	--	--	--
EASTERN REDCEDAR	143	33	110	--	--	--	--
TOTAL SOFTWOODS	945	296	279	370	--	--	--
HARDWOODS							
SELECT WHITE OAK	3414	1481	512	1421	--	--	--
OTHER WHITE OAK	76	--	--	76	--	--	--
SELECT RED OAK	191	144	47	--	--	--	--
RED OAK	1190	397	136	657	--	--	--
OTHER RED OAK	185	107	78	--	--	--	--
HICKORY A	700	240	460	--	--	--	--
HICKORY B	289	130	159	--	--	--	--
HARD MAPLE	90	90	--	--	--	--	--
SOFT MAPLE	846	--	31	703	--	--	112
BEECH	11	11	--	--	--	--	--
SWEETGUM	1	1	--	--	--	--	--
TUPELO AND BLACKGUM	481	41	120	320	--	--	--
ASH	382	--	382	--	--	--	--
SYCAMORE	1621	30	546	114	--	--	931
COTTONWOOD	4817	--	475	964	--	--	3378
YELLOW POPLAR	131	131	--	--	--	--	--
BLACK WALNUT	61	24	37	--	--	--	--
ELM	225	--	113	80	--	--	32
OTHER HARDWOODS	8603	53	2160	2836	--	--	3554
TOTAL HARDWOODS	23314	2880	5256	7171	--	--	8007
TOTAL ALL SPECIES	24259	3176	5535	7541	--	--	8007

1/ CUTTINGS OF LESS THAN 3 CORDS PER ACRE, OR THE EQUIVALENT IN BOARD FEET, ARE INCLUDED.
2/ INTERNATIONAL 1/4-INCH RULE.

Table 51.--*Area of managed harvest[1/] for 1972-1981, by harvest cuttings on commercial forest land, by forest type and stand-age class, Riverborder, Missouri*

(Thousand acres)

FOREST TYPE	TOTAL	STAND AGE (YEARS) 1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
EASTERN REDCEDAR	9.6	--	--	--	--	--	--	1.8	3.4	4.4	--	--	--	--
E.REDCEDAR-HARDWOODS	20.6	--	--	5.6	--	--	--	4.6	--	--	2.6	7.8	--	--
SHORTLEAF PINE-OAK	.7	--	--	--	--	.6	--	--	--	--	.1	--	--	--
POST-BLACKJACK OAK	56.5	--	--	--	--	--	.5	--	--	9.3	16.0	15.9	14.8	--
BLACK-SCARLET OAK	83.6	--	--	--	--	--	--	--	.4	19.4	15.5	27.3	21.0	--
WHITE OAK	131.7	--	--	--	--	--	.6	--	1.4	1.0	--	99.2	29.5	--
OAK-GUM-CYPRESS	9.4	--	--	--	--	--	--	.7	--	--	.3	7.0	1.4	--
ELM-ASH-COTTONWOOD	38.6	--	--	--	--	--	.8	11.4	4.2	8.4	8.1	3.7	2.0	--
COTTONWOOD	1.6	--	--	1.0	--	.6	--	--	--	--	--	--	--	--
MAPLE-BEECH	19.7	--	--	--	--	--	--	--	--	--	5.5	4.6	4.6	--
ALL TYPES	367.0	--	--	5.6	--	1.2	1.4	18.5	9.4	42.5	48.1	165.5	73.3	--

1/ FOR A 10-YEAR PERIOD

Table 52.--*Area of managed harvest[1/] by thinnings on commercial forest land for 1972-1981, by forest type and stand-age class, Riverborder, Missouri*

(Thousand acres)

FOREST TYPE	TOTAL	STAND AGE (YEARS) 1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
E.REDCEDAR-HARDWOODS	5.7	5.7	--	--	--	--	--	--	--	--	--	--	--	--
BLACK-SCARLET OAK	42.0	10.7	5.5	4.9	7.3	6.8	--	1.9	4.9	--	--	--	--	--
WHITE OAK	41.5	--	5.4	--	12.3	4.8	14.2	--	4.8	--	--	--	--	--
OAK-GUM-CYPRESS	7.8	2.0	--	3.3	2.5	--	--	--	--	--	--	--	--	--
ELM-ASH-COTTONWOOD	45.1	.4	--	25.0	14.5	1.9	3.7	--	--	--	--	--	--	--
MAPLE-BEECH	21.1	--	--	--	3.8	4.9	1.8	4.6	--	--	--	--	--	--
ALL TYPES	169.2	18.8	10.9	33.2	40.5	18.4	19.7	6.5	9.7	--	--	--	--	--

1/ FOR A 10-YEAR PERIOD

PRINCIPAL TREE SPECIES IN MISSOURI'S RIVERBORDER UNIT[4]

SOFTWOOD SPECIES

Shortleaf pine . . . . . *Pinus echinata*
Baldcypress . *Taxodium distichum* var. *distichum*
Eastern redcedar . . . . . *Juniperus virginiana*

HARD HARDWOOD SPECIES

Ashes:
- White ash . . . . . *Fraxinus americana*
- Green ash . . . . . *Fraxinus pennsylvanica*
- Blue ash . . . . . *Fraxinus quadrangulata*

American beech . . . . . *Fagus grandifolia*
Black walnut . . . . . *Juglans nigra*

Hard maples:
- Black maple . . . . . *Acer nigrum*
- Sugar maple . . . . . *Acer saccharum*

Hickory group A:
- Pecan . . . . . *Carya illinoensis*
- Shellbark hickory . . . . . *Carya laciniosa*
- Shagbark hickory . . . . . *Carya ovata*
- Mockernut hickory . . . . . *Carya tomentosa*

Hickory group B:
- Bitternut hickory . . . . . *Carya cordiformis*
- Pignut hickory . . . *Carya glabra* var. *glabra*
- Black hickory . . . . . *Carya texana*

River birch . . . . . *Betula nigra*

Select white oaks:
- White oak . . . . . *Quercus alba*
- Bur oak . . . . . *Quercus macrocarpa*
- Swamp chestnut oak . . . . . *Quercus michauxii*
- Chinkapin oak . . . . . *Quercus muehlenbergii*

White oaks:
- Swamp white oak . . . . . *Quercus bicolor*
- Overcup oak . . . . . *Quercus lyrata*

Other white oaks:
- Post oak . . . *Quercus stellata* var. *stellata*

Select red oaks:
- Cherrybark oak . . . . . *Quercus falcata* var. *pagodaefolia*
- Northern red oak . . . . . *Quercus rubra*
- Shumard oak . *Quercus shumardii* var. *shumardii*

Red oaks:
- Scarlet oak . . . . . *Quercus coccinea*
- Southern red oak . *Quercus falcata* var. *falcata*
- Black oak . . . . . *Quercus velutina*

Other red oaks:
- Shingle oak . . . . . *Quercus imbricaria*
- Blackjack oak . . . . . *Quercus marilandica*
- Pin oak . . . . . *Quercus palustris*
- Willow oak . . . . . *Quercus phellos*

Other hard hardwoods:
- Black locust . . . . . *Robinia pseudoacacia*
- Common persimmon . . . . *Diospyros virginiana*
- Flowering dogwood . . . . . *Cornus florida*
- Honeylocust . . . . . *Gleditsia triacanthos*
- Red mulberry . . . . . *Morus rubra*
- Sugarberry . . . . . *Celtis laevigata*

SOFT HARDWOOD SPECIES

American basswood . . . . . *Tilia americana*
American sycamore . . . . *Platanus occidentalis*
Black cherry . . . . . *Prunus serotina*
Butternut . . . . . *Juglans cinerea*

Cottonwoods:
- Eastern cottonwood . . . . . *Populus deltoides*

Elms:
- Winged elm . . . . . *Ulmus alata*
- American elm . . . . . *Ulmus americana*
- Slippery elm . . . . . *Ulmus rubra*
- Rock elm . . . . . *Ulmus thomasii*

Soft maples:
- Red maple . . . . . *Acer rubrum* var. *rubrum*
- Silver maple . . . . . *Acer saccharinum*

Sweetgum . . . . . *Liquidambar styraciflua*

Tupelo and blackgum:
- Blackgum . . . . *Nyssa sylvatica* var. *biflora*
- Black tupelo . *Nyssa sylvatica* var. *sylvatica*
- Water tupelo . . . . . *Nyssa aquatica*

Yellow-poplar . . . . . *Liriodendron tulipifera*

Other soft hardwoods:
- Black willow . . . . . *Salix nigra*
- Boxelder . . . . . *Acer negundo*
- Hackberry . . . . . *Celtis occidentalis*
- Kentucky coffeetree . . *Gymnocladus dioicus*
- Northern catalpa . . . . . *Catalpa speciosa*
- Ohio buckeye . . . . . *Aesculus glabra*
- Sassafras . . . . . *Sassafras albidum*

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[4] *The common and scientific names are based on "Check List of Native and Naturalized Trees of the United States (Including Alaska)," by Elbert L. Little, Jr., U.S. Dep. Agric., Agric. Handb. 41, 472 p. 1953.*

APPENDIX

ACCURACY OF SURVEY

Forest survey information is based on a sampling procedure designed to provide reliable statistics at the State and Survey Unit levels. Consequently, the reported figures are estimates only. However, a measure of reliability of these figures is given by sampling errors. These sampling errors may be interpreted as meaning that the chances are two out of three that the results for the sample differ by no more than the amount indicated, from the results that would have been obtained if all trees in the Unit had been measured (a 100-percent inventory), using the same tree measurements.

For example, the estimated area of commercial forest land in the Riverborder Unit in 1972, 2,108.9 thousand acres, has a sampling error of ±1.9 percent (±40.1 thousand acres). The chances are two out of three, then, that the commercial forest area falls between 2,068.8 and 2,149.0 thousand acres (2,108.9 ± 40.1), the limits within which the results of a 100-percent inventory would occur.

Following are sampling errors for total estimated volume, net growth, and removals for both growing stock and sawtimber, and for area of commercial forest land during the 1972 Riverborder Survey:

Item	*Riverborder Unit totals*	*Sampling error (Percent)*
Growing stock:		
Volume	16,883.9 M cords	3.5
Growth	432.6 M cords	4.4
Removals	450.1 M cords	10.0
Sawtimber:		
Volume	3,641.1 MM bd. ft.	5.0
Growth	85.2 MM bd. ft.	6.0
Removals	115.4 MM bd. ft.	8.1
Commercial forest land	2,108.9 M acres	1.9

As survey data are broken down into units smaller than State or Survey Unit totals, the sampling error increases. The smaller the breakdown, the larger the sampling error. For example, the sampling error for area of commercial forest land in a particular county is higher than that for total commercial forest area in the Survey Unit. An approximation of the increasing sampling error can be obtained from table 53, which shows the sampling errors associated with estimates smaller than totals in the Riverborder Unit.

Table 53.--*Sampling errors*[1/] *for estimates smaller than unit totals of volume, net growth, and removals, and of area of commercial forest land, Riverborder, Missouri, 1972*

SAMPLING ERROR (PERCENT)	COMMERCIAL FOREST	GROWING STOCK			SAWTIMBER		
		INVENTORY	GROWTH	REMOVALS	INVENTORY	GROWTH	REMOVALS
	THOUSAND ACRES	THOUSAND CORDS			MILLION BOARD FEET[2/]		
1	7,784.1						
2	1,946.0						
3	864.9	23,447.6					
4	486.5	13,189.3	515.8		5,668.1		
5	311.4	8,441.1	330.1	1,793.7	3,627.6	123.6	301.3
10	77.8	2,110.3	82.5	448.1	906.9	30.9	75.3
15	34.6	937.9	36.7	198.7	403.1	13.7	33.5
20	19.5	527.6	20.6	112.6	226.7	7.7	18.8
25	12.5	337.7	13.2	72.2	145.1	4.9	12.1
50	3.1	84.4	3.3	17.7	36.3	1.2	3.0
100	.8	21.1	.8	5.1	9.1	.3	.8

1/ AT THE 68-PERCENT PROBABILITY LEVEL.
2/ INTERNATIONAL 1/4-INCH RULE.

SURVEY PROCEDURE

The major steps in the survey of the Riverborder Unit were as follows:

1. A total of 38,778 1-acre points distributed systematically across aerial photos of the entire area were observed. These points were classified as either forest land (11,042) or nonforest land (27,736) in order to make a preliminary estimate of forest area. Next, 4,292 of the forest points were stereoclassified as to forest type, stand-size class, and density. Then 590 points classed as forest and 1,903 points classed as nonforest were examined on the ground to correct the preliminary area estimate for errors in classification and for actual changes in land use since the photos were taken. Some of the points examined were locations of permanent sample plots (each of which contained one variable-radius plot with basal area factor five) established during the 1959 survey. Of the 483 points determined to be on commercial forest land from ground examination, 206 were at previously unsampled locations and 10-point variable-radius plots (basal area factor 37.5) were established uniformly over the sample acres. The remaining 277 points were at formerly established permanent plot locations and were remeasured by superimposing 10-point variable-radius plots (basal area factor 37.5) over the existing plot in addition to remeasuring the basal area factor five plot. Tree measurements made on new and remeasured plots were the basis for estimates of timber volume, growth, mortality, number of trees, and other forest classifications.

2. Statistics on timber utilization in 1969 were obtained from mill surveys and from remeasurement of permanent sample plots. The Missouri Department of Conservation conducted a canvass of resident sawmills, veneer mills, and other primary wood-using plants. The North Central Forest Experiment Station canvassed resident pulpmills, and the underground mining industry in Missouri, as well as out-of-State sawmills, pulpmills, and veneer mills to determine their use of timber from Missouri. Fuelwood and fencepost output was based on U.S. Census of Agriculture and Housing figures, a canvass of public and industrial timber owners, and a canvass of resident wood-treating plants. Estimates of primary mill residue used for fuelwood were obtained from the canvass of primary wood-using plants in Missouri. Timber cut for products by owner class was determined by a canvass of all public and industrial timber owners. The portion of timber cut unaccounted for by the latter owners was grouped under "farmer and other owners."

3. To develop wood utilization factors used in converting timber products output to timber removals for saw logs, veneer logs, cooperage logs, pulpwood, and charcoal wood, 486 felled trees throughout the State were measured. Factors for all other products were obtained during the 1959-1960 Missouri utilization study.

4. Field data were sent to St. Paul where they were edited, punched on cards, and stored on magnetic tape for later machine sorting, computing, and tabulation.

MANAGED HARVEST

Managed harvest is the estimated volume of timber on commercial forest land that could be cut annually for the next 10 years, while improving tree stocking and bringing about a more even distribution of age classes. In Missouri, annual managed harvest is shown separately as that from harvest cutting and from thinnings, and was determined by computer using an area control system for determining the number of acres to be cut annually.

The harvest cut of sawtimber was calculated from stands of forest types normally managed for sawtimber whose site index and age indicated they were ready for harvest, or would be within the next 10 years. Table 54 shows the site index used in these calculations for each forest type to determine whether the objective of management would be to grow sawtimber or pulpwood. Included also is the rotation age for each.

Stands that did not qualify for harvest during that period were checked to see if they were overstocked by basal area standards, or would be within the next 10 years. Stands determined to be overstocked were "thinned" by the computer

Table 54.--*Forest type, site index, and rotation age, by management objective, used in calculation of annual managed harvest, Missouri, 1972*

Forest type	Site index	Rotation age	Management objective
		Years	
Shortleaf pine	50 or higher	60	Sawtimber
	Less than 50	40	Pulpwood
Shortleaf pine-oak	60 or higher	80	Sawtimber
	Less than 60	50	Pulpwood
Eastern redcedar	35 or higher	55	Sawtimber
	Less than 35	70	Sawtimber
Eastern recedar-hardwood	45 or higher	50	Sawtimber
	Less than 45	60	Sawtimber
Black-scarlet oak	60 or higher	80	Sawtimber
	Less than 60	50	Pulpwood
White oak	60 or higher	80	Sawtimber
	Less than 60	50	Pulpwood
Post-blackjack oak	All sites	50	Pulpwood
Oak-gum-cypress	All sites	60	Sawtimber
Cottonwood	All sites	30	Sawtimber
Elm-ash-cottonwood	All sites	50	Sawtimber
Maple-beech	All sites	90	Sawtimber

back to their recommended basal-area stocking level, and the volume of sawtimber trees "thinned" was added to the volume of managed harvest by thinnings of growing stock and sawtimber. The volume of poletimber trees "thinned" was added to the growing-stock managed harvest by thinnings. In scheduling thinnings, the computer program first "removes" rough and rotten trees, then short-log trees, and finally, growing-stock trees. The volume of managed harvest from rough, rotten, and short-log (rough) trees is kept separate from that from growing-stock trees.

The harvest cut of growing stock included that of sawtimber in addition to the volume from stands of forest types normally managed for pulpwood that were or would be rotation age within the next 10 years.

Managed harvest is based on the assumptions that all timber will be available and accessible when needed, and that a ready market will exist for every species, size, and grade of material harvested. Further, it assumes that the proper sequence of cutting is known and will be followed, and that logging practices employed will result in an improved forest. Because there is no way of guaranteeing that these assumptions will be carried out during the next 10 years, the managed harvest estimates should be compared with timber removals figures only in a general way.

LOG GRADE

The butt log of every sawtimber tree (2,164 trees) on every permanent sample plot in the Riverborder Unit and all of the logs in a smaller sample of trees throughout the State (265 trees) were log-graded. The volume yield by log grade for each tree in the smaller sample was used to distribute the volume of trees in the permanent plot sample into log-grade classes. The resulting volumes were expanded to provide an estimate for the entire Unit.

Logs are graded on the basis of external characteristics as indicators of quality. Hardwood species were graded according to "Hardwood Log Grades for Standard Lumber and How to Use Them" published by the Forest Products Laboratory under the designation D1737A, 1961, and USDA Forest Service standards for hardwood tie and timber logs. The best 12-foot section of the lowest 16-foot hardwood log, or the best 12-foot

upper section if the butt log did not meet minimum log grade standards, was graded.

Shortleaf pine was graded according to "Interim Southern Pine Log Grades," USDA Forest Service, 1953. All other softwoods were graded according to "Specifications for Log Grades of Hardwoods and Softwoods," Northern Hemlock and Hardwood Association, 1947. The lowest 16-foot log in softwood trees or a shorter log down to 12 feet if a 16-foot butt log was not present, was graded.

☆U.S. Government Printing Office: 1975 -- 667-561

Spencer, John S., Jr., and Arnold J. Ostrom.
1975. Timber resource of Missouri's Riverborder, 1972. North Cent. For. Exp. Stn., St. Paul, Minn. 74 p. (USDA For. Serv. Resour. Bull. NC-25)

The third timber inventory of Missouri's Riverborder Forest Survey Unit shows that neither the total volume of growing stock nor of sawtimber changed significantly between 1959 and 1972. Area of commercial forest land declined slightly. Presents statistics on forest area and timber volume, growth, mortality, ownership, and use in 1972.

OXFORD: 524.1:905.2(778). KEY WORDS: timber volume, growth, utilization, forest areas.

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Some Recent Forest Survey Reports Published by
the North Central Forest Experiment Station

Primary forest products industry and industrial roundwood production, Michigan, 1969, by James E. Blyth and Allen H. Boelter. USDA For. Serv. Resour. Bull. NC-12, 12 p., illus. 1971.

Kansas saw-log production jumps 38 percent from 1964 to 1969, by James E. Blyth and Leonard K. Gould. USDA For. Serv. Res. Note NC-128, 2 p., illus. 1971.

Wisconsin's 1968 timber resource--a perspective, by John S. Spencer, Jr. and Harry W. Thorne. USDA For. Serv. Resour. Bull. NC-15, 80 p., illus. 1972.

Missouri's primary forest products output and industries, 1969, by James E. Blyth and Robert Massengale. USDA For. Serv. Resour. Bull. NC-16, 15 p., illus. 1972.

Forest area in Wisconsin counties, 1968, by Burton L. Essex. USDA For. Serv. Res. Note NC-135, 4 p., illus. 1972.

Iowa saw-log production and sawmill industry, 1969, by James E. Blyth and William A. Farris. USDA For. Serv. Res. Note NC-136, 4 p., illus. 1972.

Timber volume in Wisconsin counties, by Arnold J. Ostrom. USDA For. Serv. Res. Note NC-145, 4 p., illus. 1972.

Pulpwood production in the North Central Region by county, 1971, by James E. Blyth. USDA For. Serv. Resour. Bull. NC-17, 21 p., illus. 1973.

Pulpwood production in the North Central Region by county, 1972, by James E. Blyth. USDA For. Serv. Resour. Bull. NC-18, 16 p., illus. 1973.

Lake States pulpwood production dips to 4 million cords in 1971, by James E. Blyth. USDA For. Serv. Res. Note NC-148, 3 p. 1973.

Local net timber volume equations for Wisconsin, by Jerold T. Hahn. USDA For. Serv. Res. Note NC-149, 4 p., illus. 1973.

Pulpwood production in the Lake States by county, 1972, by James E. Blyth. USDA For. Serv. Res. Note NC-152, 4 p. 1973.

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